





## OPERATIVE PROCEDURE



# O P E R A T I V E P R O C E D U R E

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This book was first published in the United States of America, where it has proved of great service to surgeons and medical students alike

The few copies which reached this country were so warmly welcomed that the publishers decided to print a British edition of the book

Text and illustrations remain identical with those in the original American edition

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*Johnson & Johnson*  
(GREAT BRITAIN) LIMITED

*Slough Bucks England*

1944

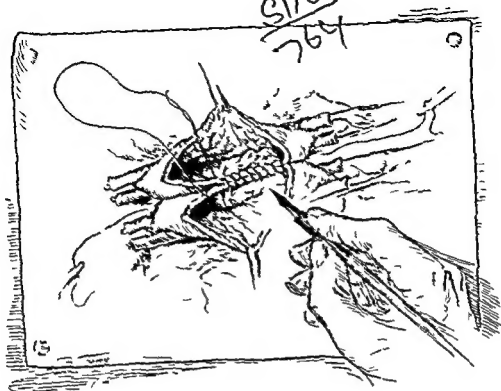
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**1939**

**JOHNSON & JOHNSON**

*Printed and made in England at the Farnham Press London*

5110  
764



## The Origin and Function of the 'Operative Procedure' Series

*This series of plates published by Johnson & Johnson in  
the leading surgical journals of the United States of  
America was prepared in collaboration with the staff of  
Surgeons Gynecology and Obstetrics*

THE SURGEON who casually views or carefully studies these illustrations will realize that they are not to be found elsewhere in medical or surgical literature. As originals, it is understood that they have to be carefully prepared but the amount of effort expended in selecting the subject and then later selecting the important steps to be illustrated may not be comprehended as quickly.

There is probably no branch of science or art which has given more evidence of progress in the last two decades than the science of surgical technique. The perfection of older methods and originality in new methods have given to the world a mass of material which is worthy of careful immediate study and preservation for future reference.

The selection of the subjects in this series was made with the help of several surgeons whose practice and experience enabled the pointing out of not only the most timely technique but likewise the outstanding steps. In this way the artist was furnished with material from which he might accurately illustrate approved technique in a new and original manner.

*LIGATURE DEPARTMENT*  
**JOHNSON & JOHNSON**  
SLOUGH BUCKS

# SUTURE TECHNIQUE (NO 1)

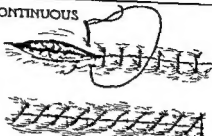
PURSE STRING



Tied



CONTINUOUS



Two types

CUSHING



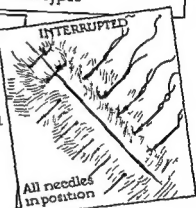
LEMBERT



Interrupted

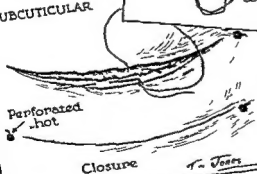
Continuous

INTERRUPTED



All needles in position

SUBCUTICULAR

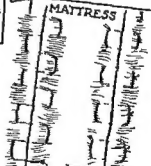


Perforated - hot

Closure

J. Jones

MATTRESS



Continuous

Interrupted

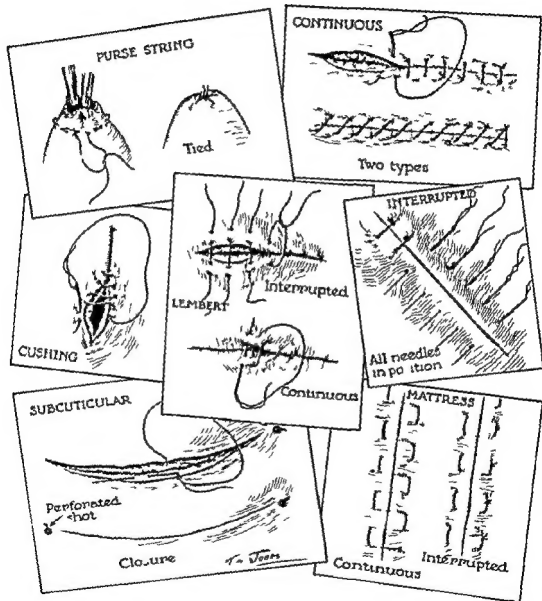


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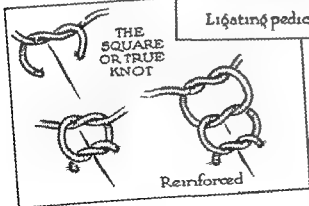
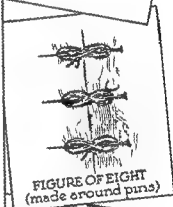
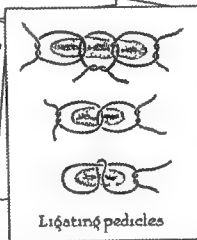
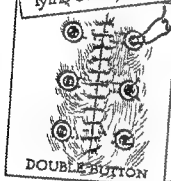
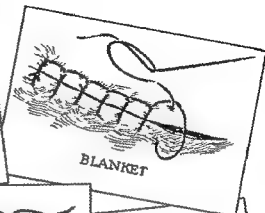
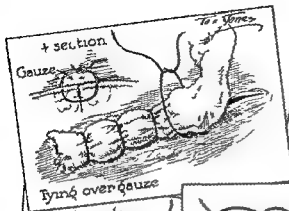
The selection of the subjects in this series was made with the help of several surgeons whose practice and experience enabled the pointing out of not only the most timely technique but likewise the outstanding steps. In this way the artist was furnished with material from which he might accurately illustrate approved technique in a new and original manner.

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# SUTURE TECHNIQUE (NO 1)

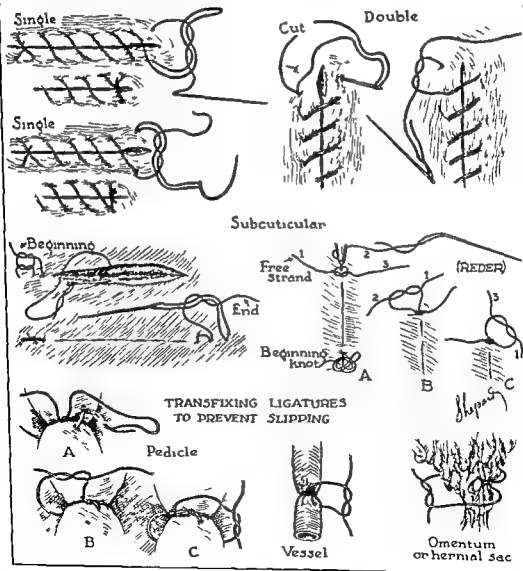


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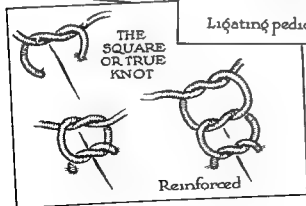
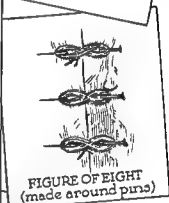
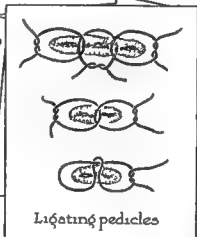
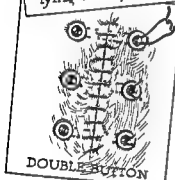
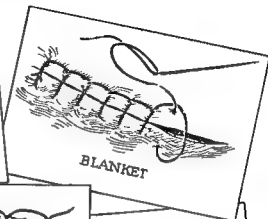
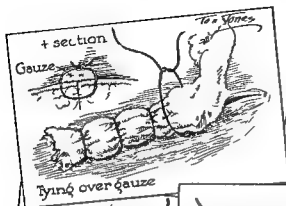


## SUTURE TECHNIQUE (NO 3)

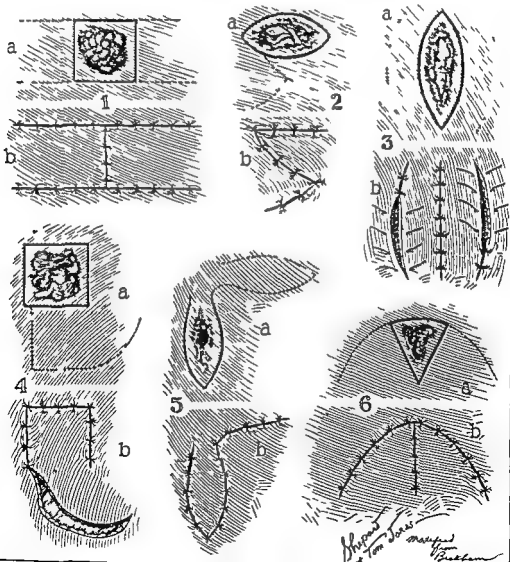
### METHODS FOR SECURING THE ENDS OF CONTINUOUS SUTURES



# SUTURE TECHNIQUE (NO 2)

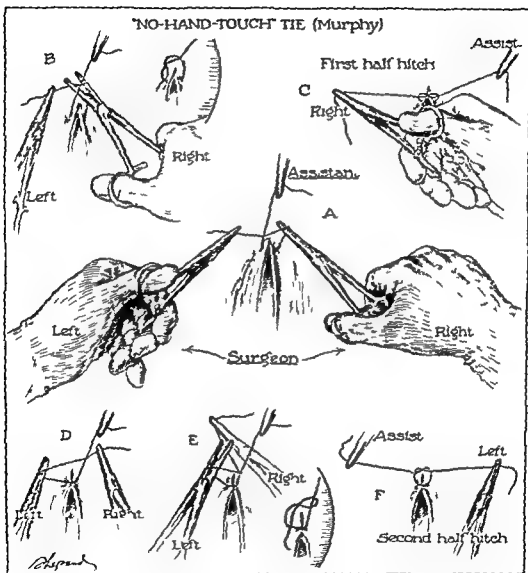


## CLOSURE OF SKIN DEFECTS

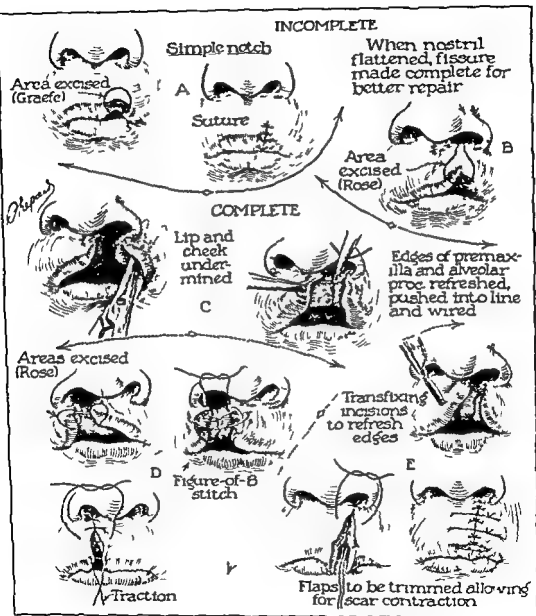


# SUTURE TECHNIQUE (NO 4)

## 'NO-HAND-TOUCH' TIE (Murphy)



# OPERATIONS FOR HARELIP—SINGLE CLEFT





# RESECTION FOR EPITHELIOMA OF LIP

70 Jones

## EARLY CASE



Incision

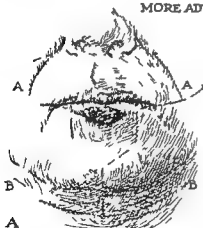


Sutures in position  
(Stitches in mucous  
membrane tied first)

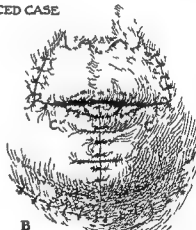
C  
Sutures tied (Note full  
ness in center to prevent  
subsequent notching)



## MORE ADVANCED CASE

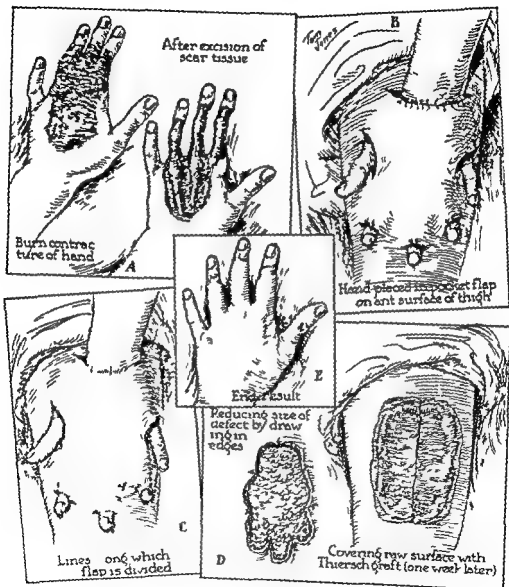


Incisions AA Triangles of skin  
removed to permit reconstruc-  
tion of lower lip BB Incision  
for removal of lymph nodes



Operation completed Note  
reconstructed vermillion  
border CC of mucous  
membrane of cheek

# SKIN GRAFTING FOR BURN CONTRACTURE



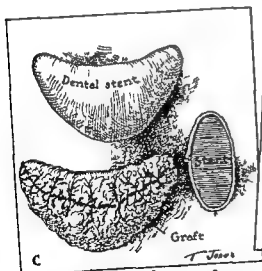
# SKIN GRAFTING—INLAY GRAFTS



Burn contracture of neck



Raw surface resulting from simple division of scar and freeing of tension

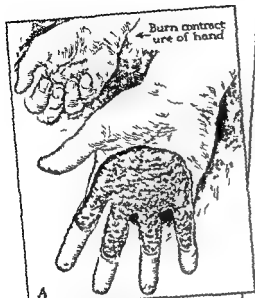


Graft with raw surface outward wrapped about mold of dental stent



Graft covered mold buried in raw surface

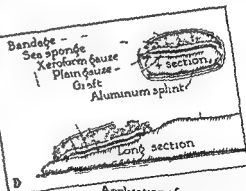
# SKIN GRAFTING—FREE FULL THICKNESS GRAFTS



Extent of raw surface resulting from excision of scar



Suture of graft completed with fine sutures

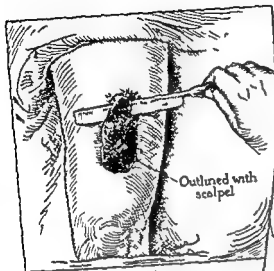


Application of pressure dressing over graft

# TREATMENT OF BURN CONTRACTURE OF AXILLA



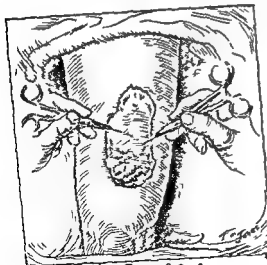
# SKIN GRAFTING—SPLIT GRAFTS



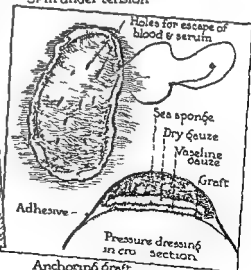
Excision of granulation tissue from raw area



Cutting of graft skin under tension

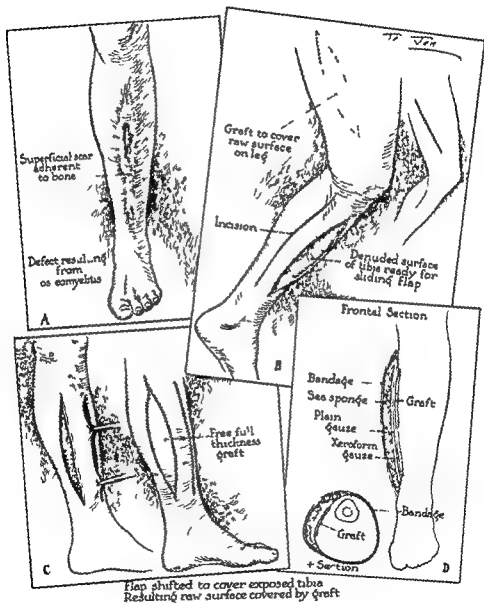


Teasing graft into position with needles

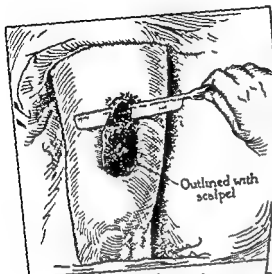


Anchoring graft with fine skin suture

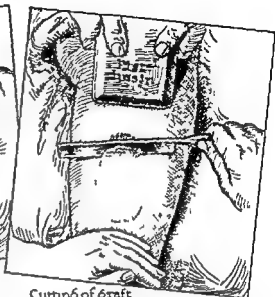
# FULL THICKNESS GRAFT WITH SLIDING FLAP



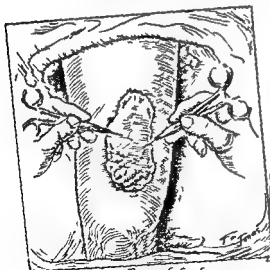
# SKIN GRAFTING—SPLIT GRAFTS



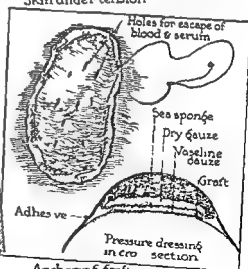
Excision of granulation tissue from raw area



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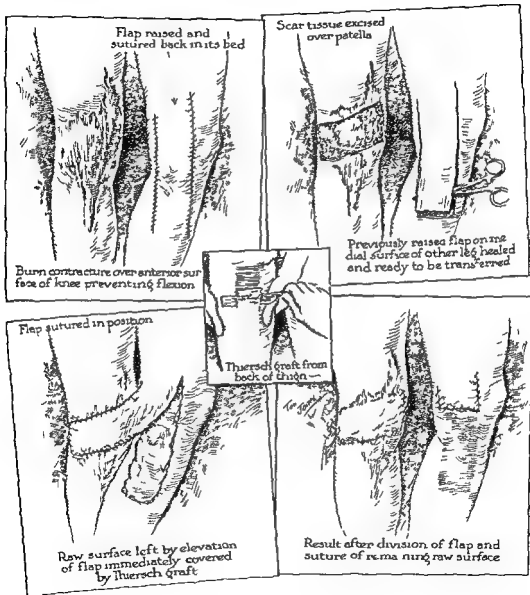
Teasing graft into position with needles



Anchoring graft with fine skin suture



## DELAYED PEDICLED FLAP

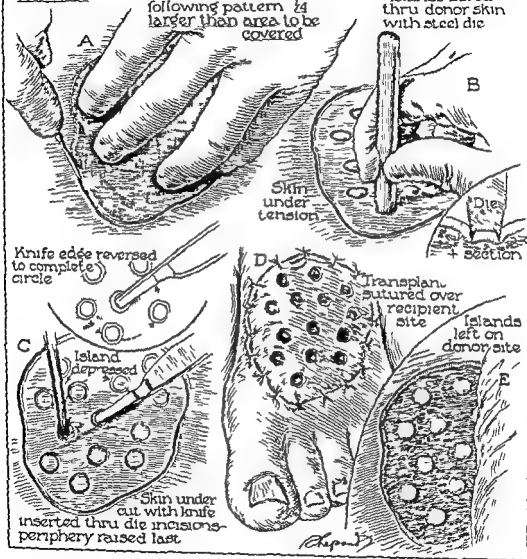


# SKIN GRAFTING—SIEVE GRAFT (NO 1)

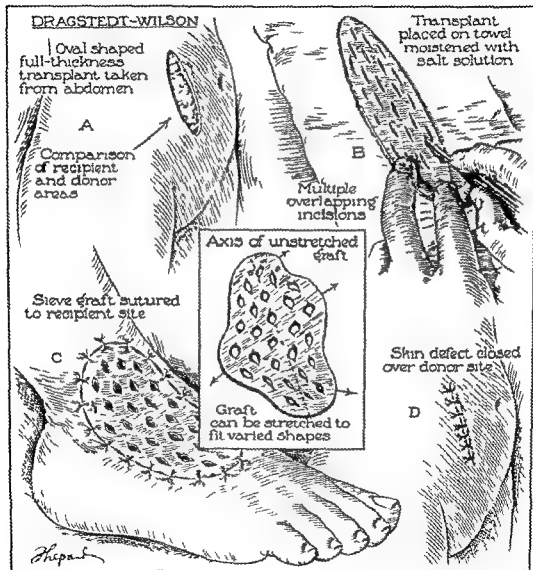
DOUGLAS

Donor skin incised  
following pattern  $\frac{1}{4}$   
larger than area to be  
covered

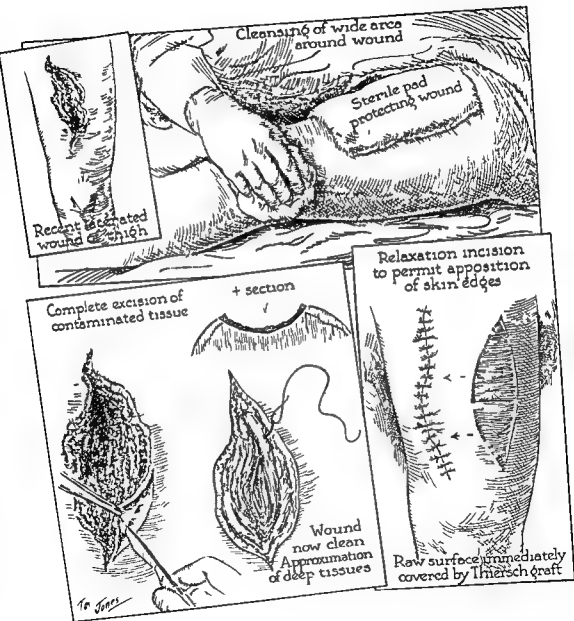
Islands bored  
thru donor skin  
with steel die



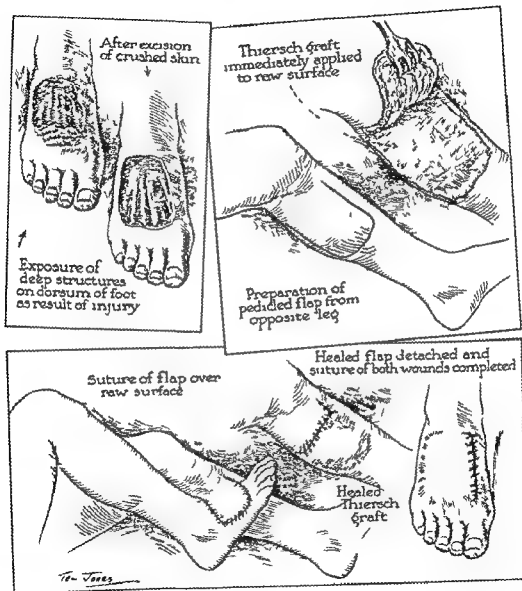
# SKIN GRAFTING—SIEVE GRAFT (NO 2)



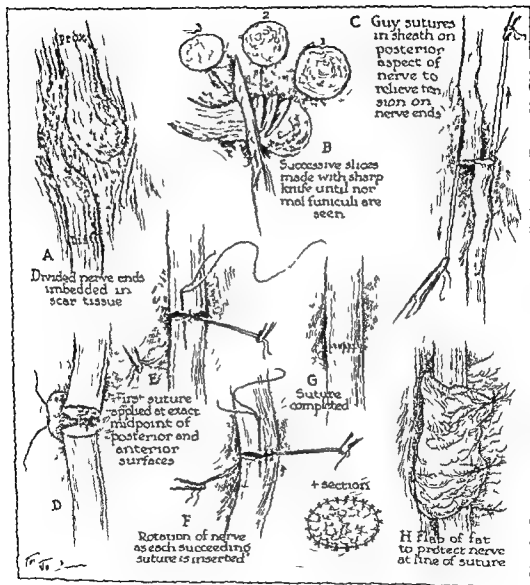
# IDEAL TREATMENT OF LACERATED WOUND



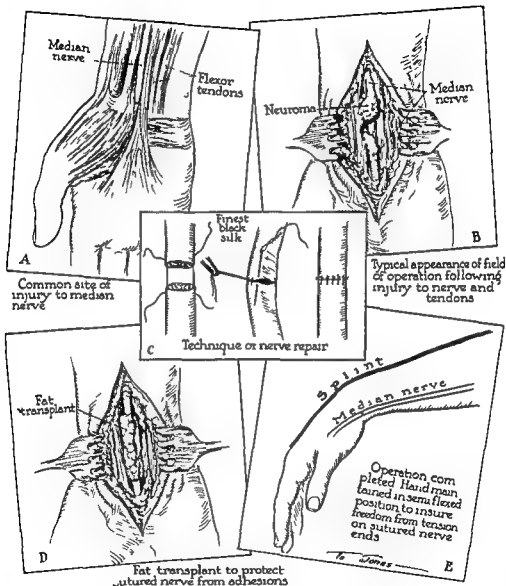
# IMMEDIATE TREATMENT OF CRUSHING INJURY OF FOOT



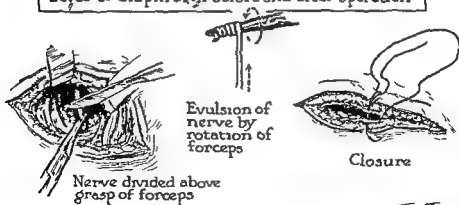
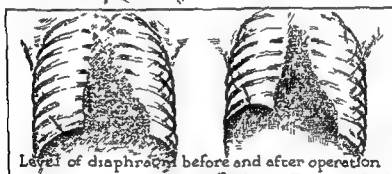
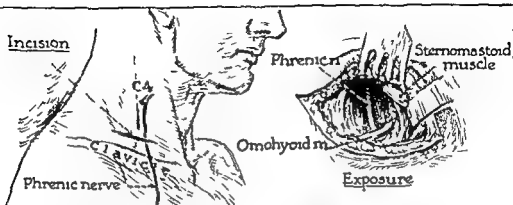
# TECHNIQUE OF NERVE SUTURE



# NERVE SUTURE



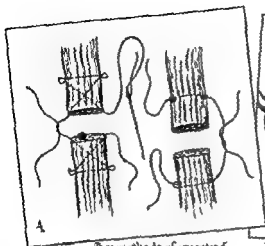
# PHRENIC NEURECTOMY



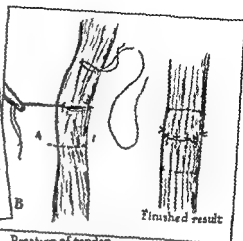
Tom Jones



# TENDON SUTURES



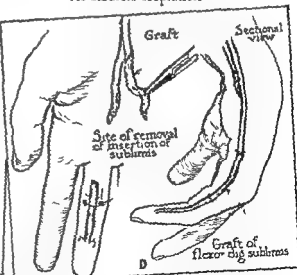
Two methods of inserting stay sutures in divided tendons



Rotation of tendon to permit insertion of sutures for accurate coaptation

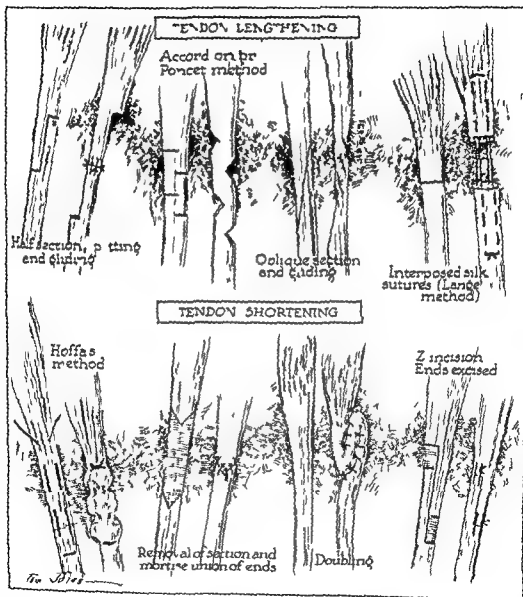


A common site (x) of tendon injury with resulting retraction of tendon ends

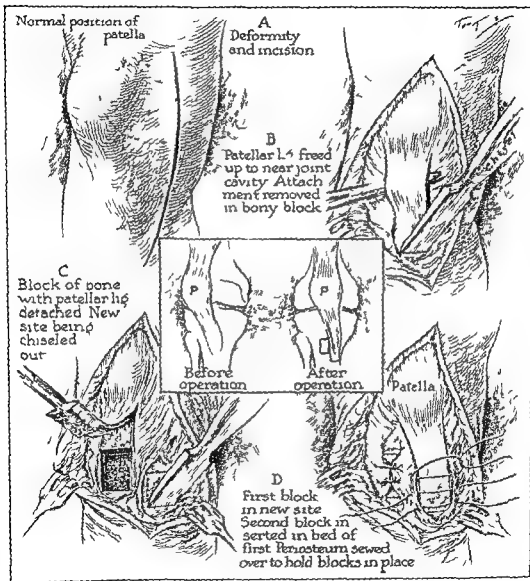


Technique of repair (finger semi flexed)

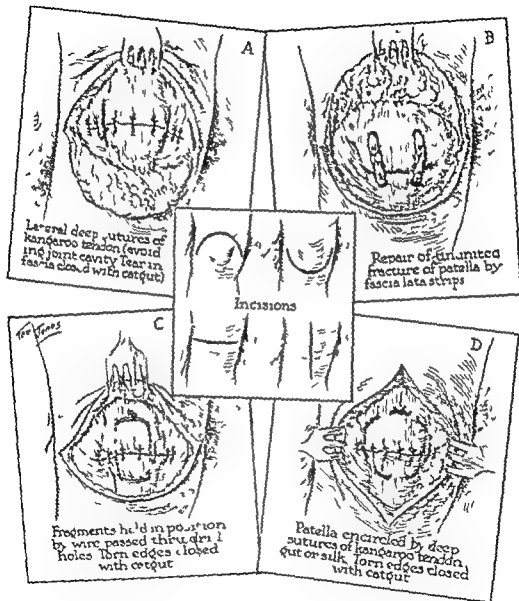
# TENDON LENGTHENING AND SHORTENING



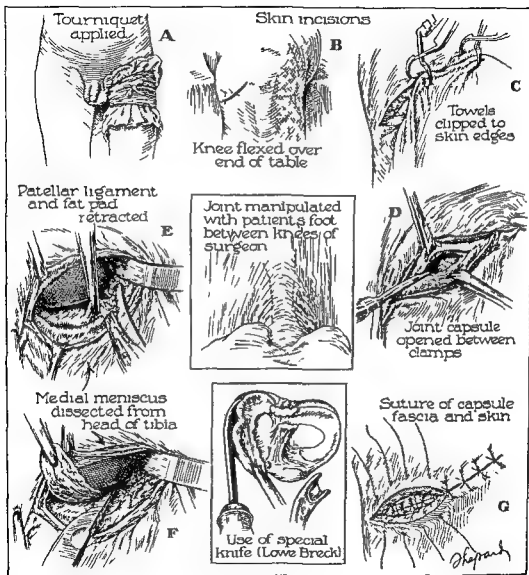
# REPAIR OF RECURRENT DISLOCATION OF PATELLA



# REPAIR OF FRACTURED PATELLA

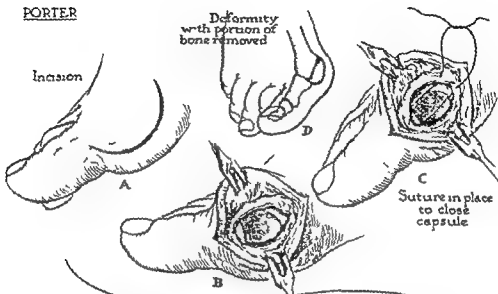


# REMOVAL OF SEMILUNAR CARTILAGE

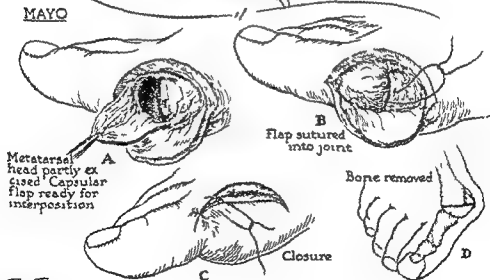


# OPERATIVE TREATMENT OF BUNIONS

## PORTER

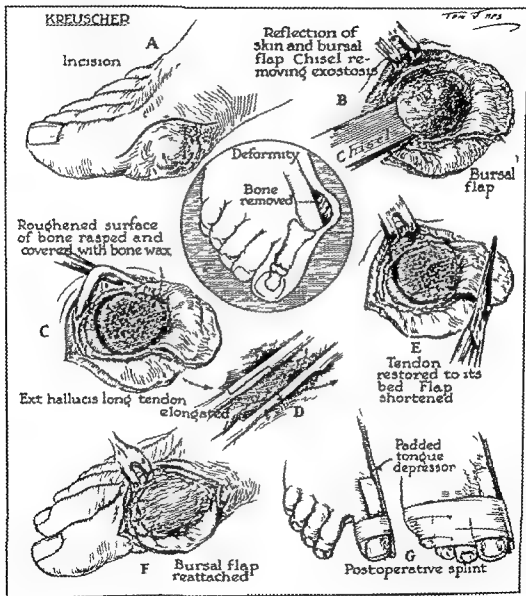


## MAYO

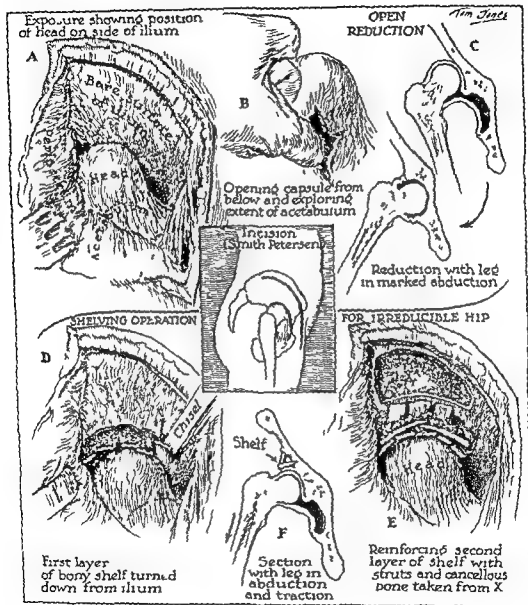


To Jones—

# OPERATIVE TREATMENT OF BUNIONS (NO 2)

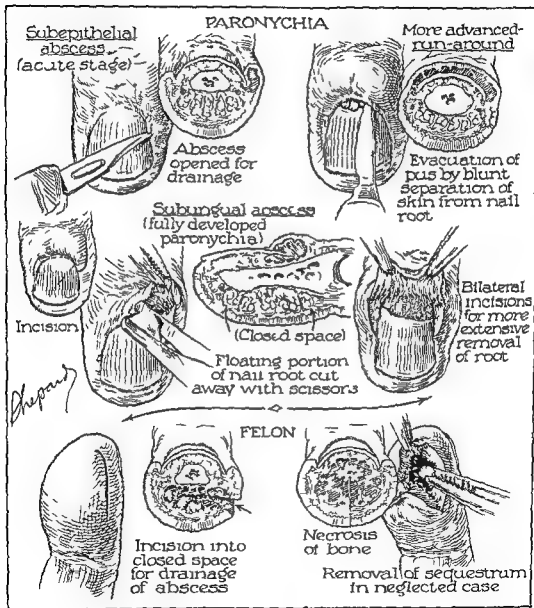


# OPERATION FOR CONGENITAL DISLOCATED HIP





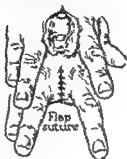
# SURGICAL TREATMENT FOR PARONYCHIA AND FELON



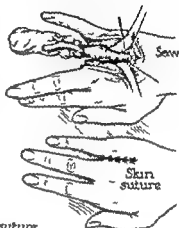
# AMPUTATION OF THE DIGITS

## METACARPOPHALANGEAL DISARTICULATION AND AMPUTATION PROXIMAL TO THE METACARPAL HEAD

Incisions



Flap suture



Skin suture

## INTERPHALANGEAL DISARTICULATION

Rubber band tourniquet



Tendons left long for suture



Flap suture



Amputation of a phalanx. Median and lateral incisions with long anterior flap

## DISARTICULATION OF THE TOES

Skinned



Amputation of the five toes

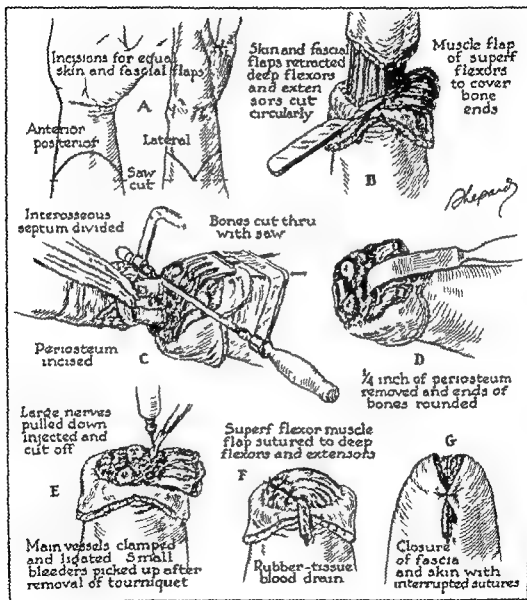


Suture of skin flap

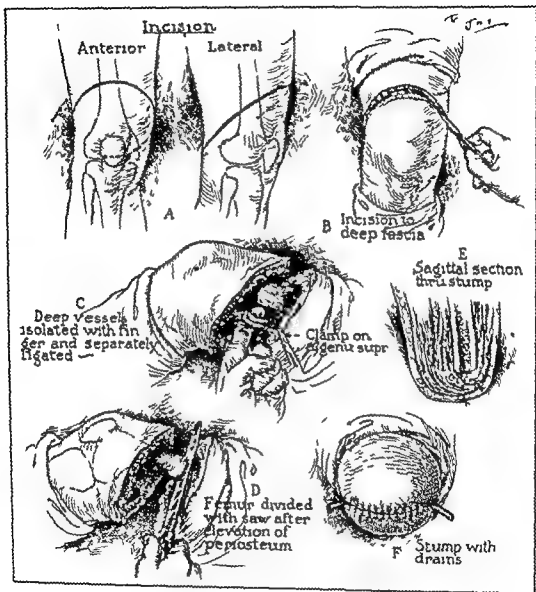


Incisions for removal of individual toes

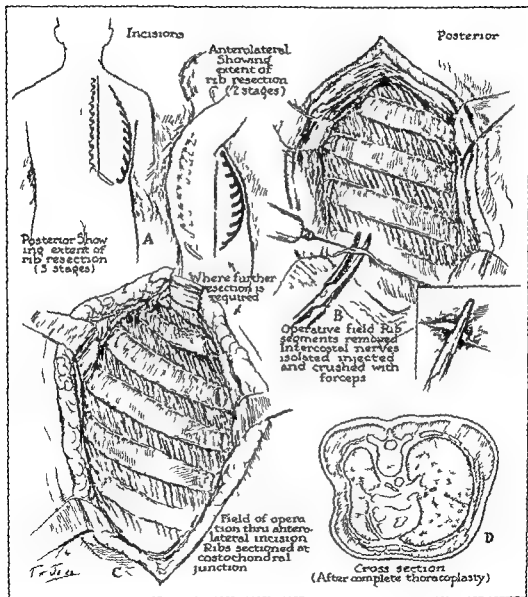
# AMPUTATION OF FOREARM



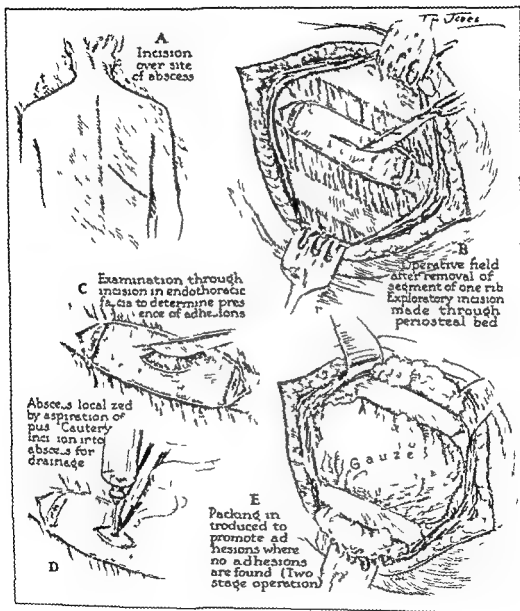
# AMPUTATION FOR GANGRENE OF LOWER EXTREMITY



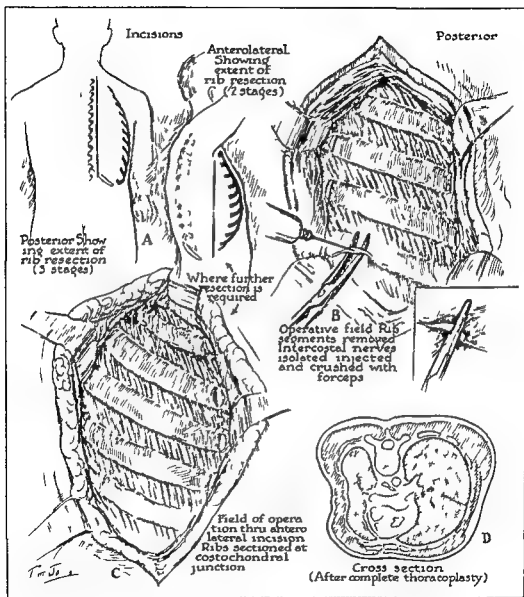
# THORACOPLASTY



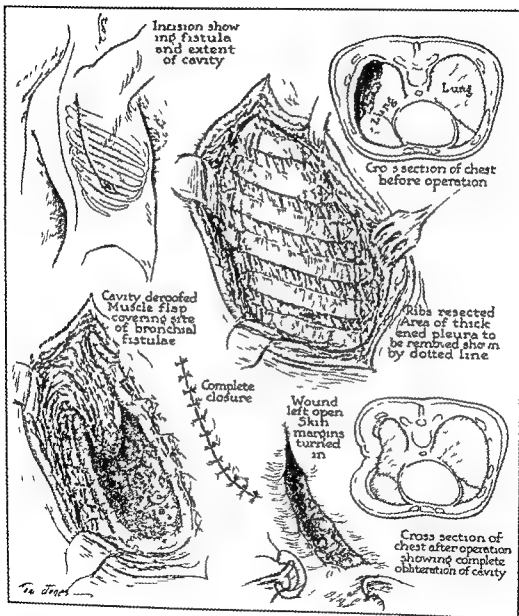
# SURGICAL TREATMENT OF LUNG ABSCESS



# THORACOPLASTY

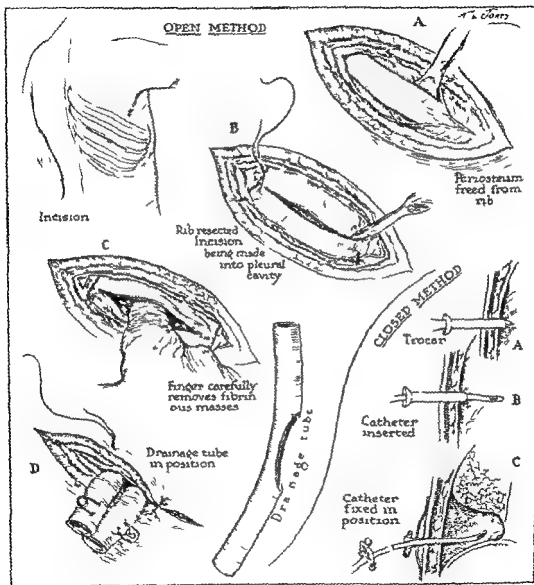


# SURGICAL TREATMENT OF ACUTE EMPYEMA

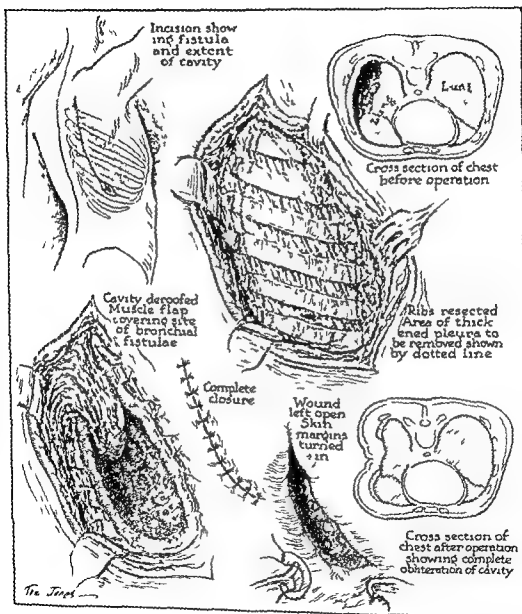




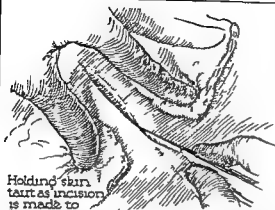
# SURGICAL TREATMENT OF ACUTE EMPYEMA



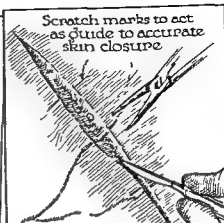
# SURGICAL TREATMENT OF ACUTE EMPYEMA



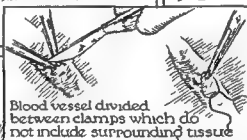
# INCISION AND CLOSURE OF WOUNDS



Holding skin taut as incision is made to facilitate accurate technique

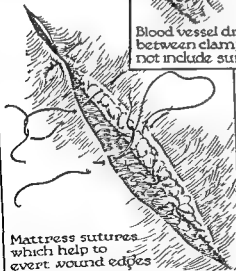


Scratch marks to act as guide to accurate skin closure

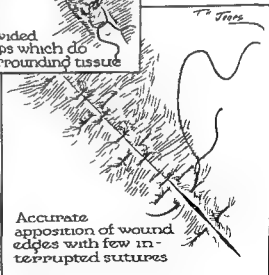


Blood vessel divided between clamps which do not include surrounding tissue

Blood vessel exposed and isolated before division

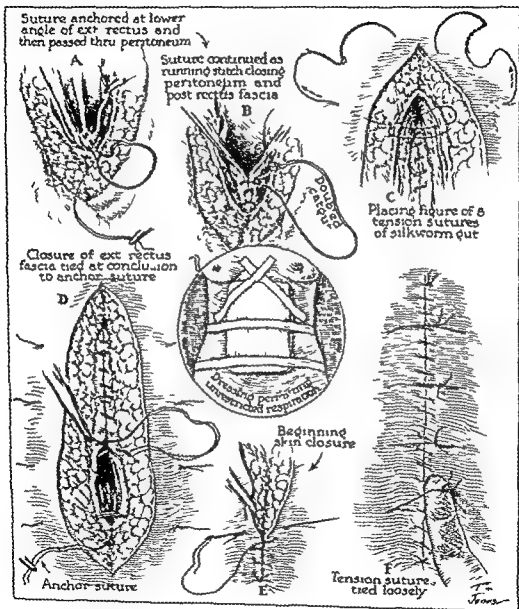


Mattress sutures which help to evert wound edges

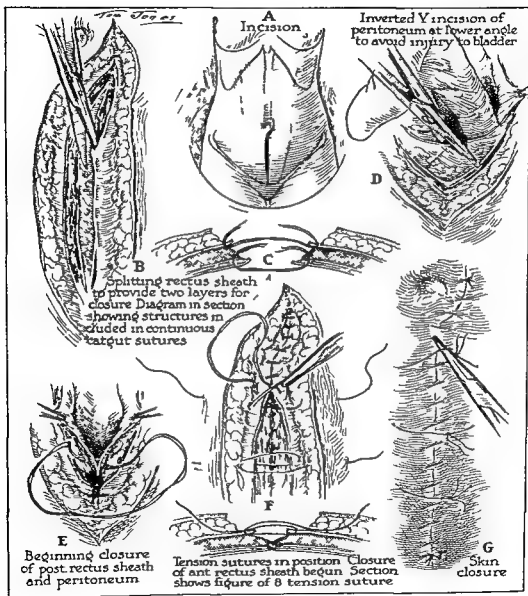


Accurate apposition of wound edges with few interrupted sutures

# CLOSURE OF RECTUS INCISION

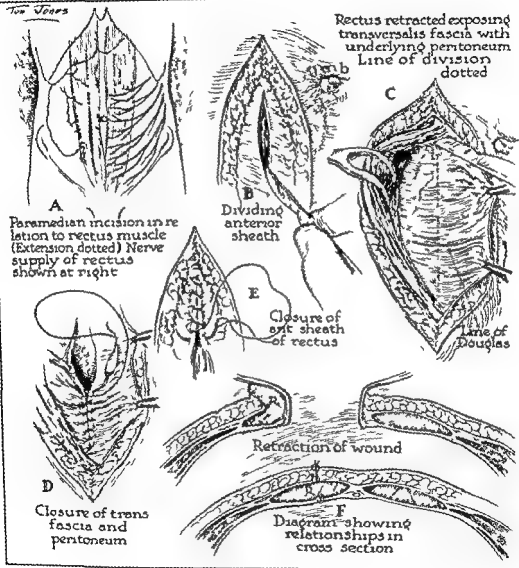


# THE LOW MIDLINE INCISION



# PARAMEDIAN INCISION FOR LAPAROTOMY

Tom Jones

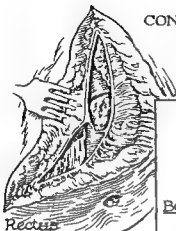
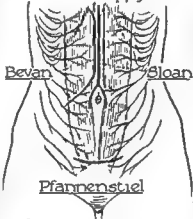


# ABDOMINAL INCISIONS

## CONSERVING INNERVATION OF THE RECTI

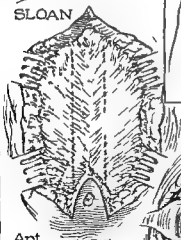
**BEVAN**  
(Gall bladder on right  
side spleen on left)

Initial incisions and  
nerve supply



Rectus

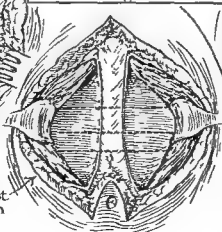
**SLOAN**



Ant  
sheath

Optional  
levels post  
sheath

*Shepard*



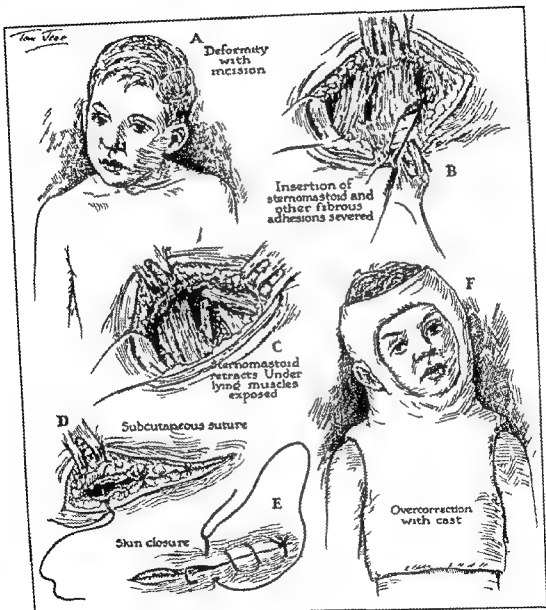
Post. sheath

**PFANNENSTIEL**



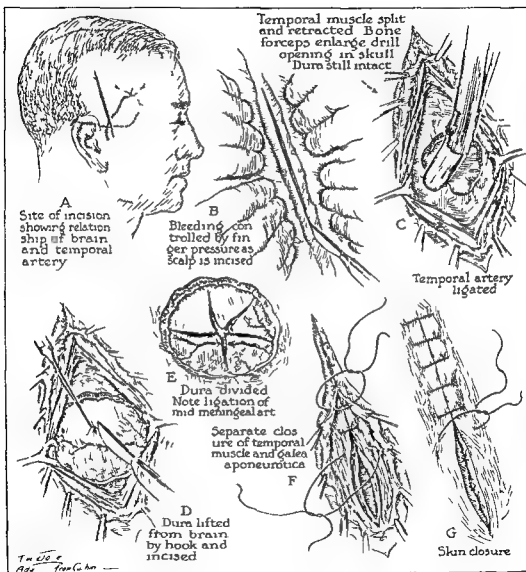
Transversalis  
fascia

# OPERATION FOR TORTICOLLIS

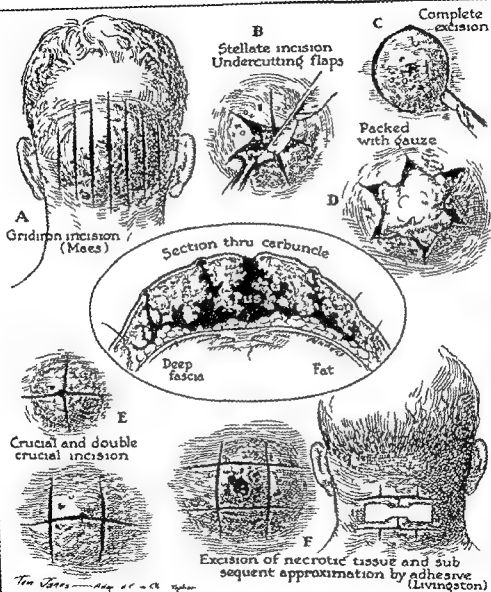




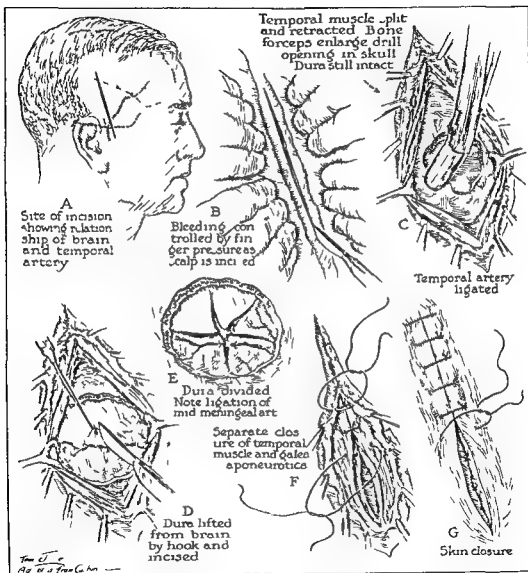
# SUBTEMPORAL DECOMPRESSION



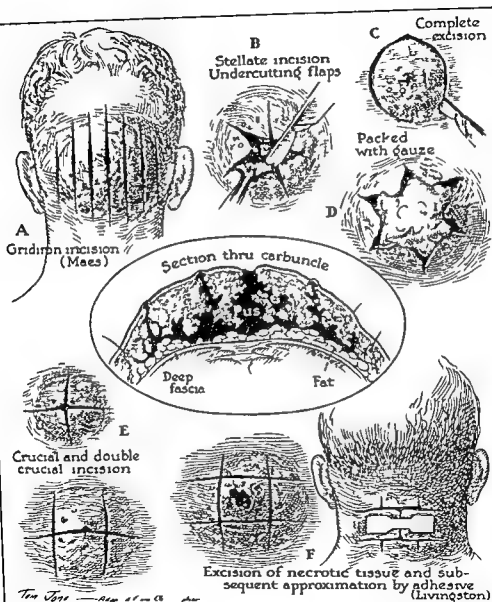
# SURGICAL TREATMENT OF CARBUNCLE



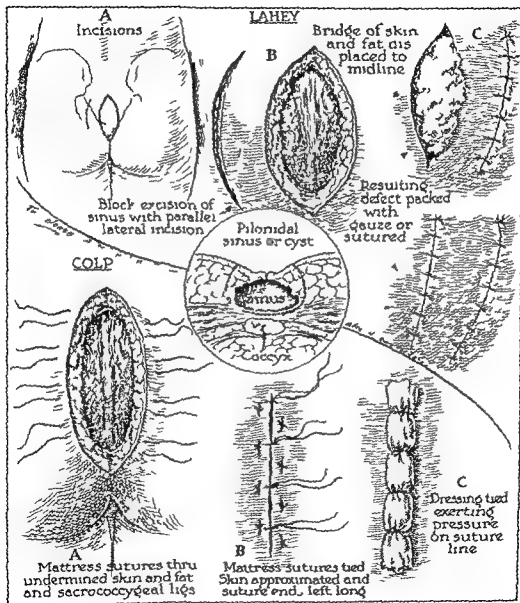
# SUBTEMPORAL DECOMPRESSION



# SURGICAL TREATMENT OF CARBUNCLE

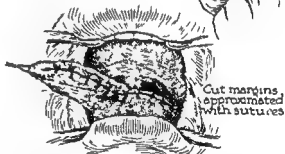
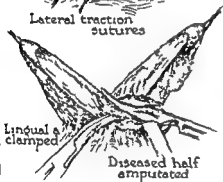
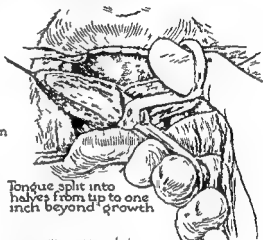
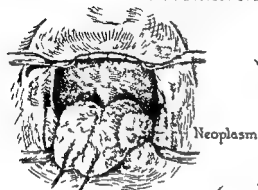


# OPERATIVE TREATMENT OF PILONIDAL SINUS

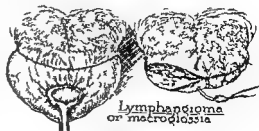


## PARTIAL RESECTION OF THE TONGUE

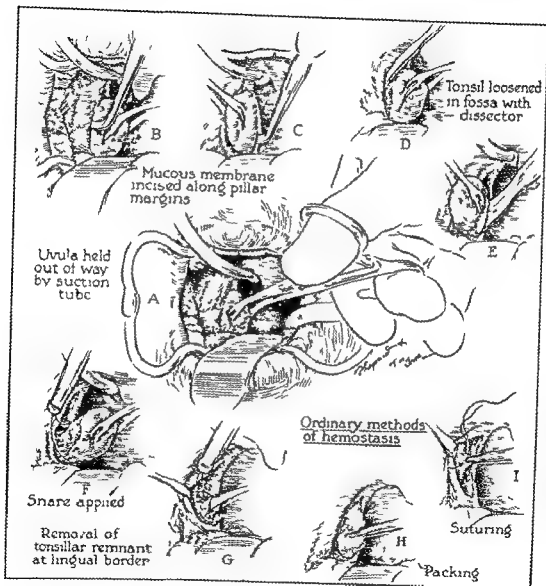
### RESECTION OF LATERAL HALF OF TONGUE FOR MALIGNANCY (WHITEHEAD)



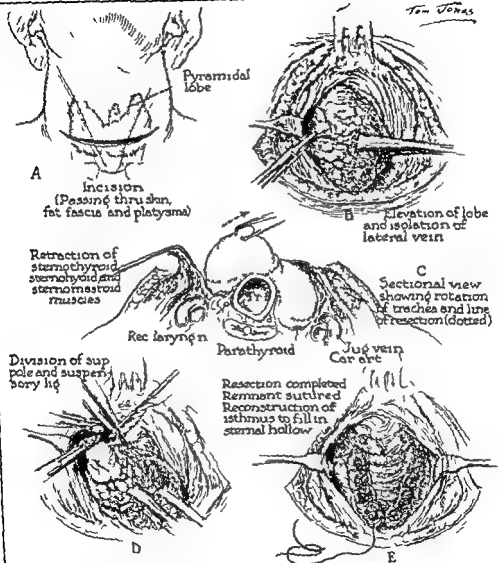
### RESECTION FOR NON MALIGNANCY



# TONSILLECTOMY

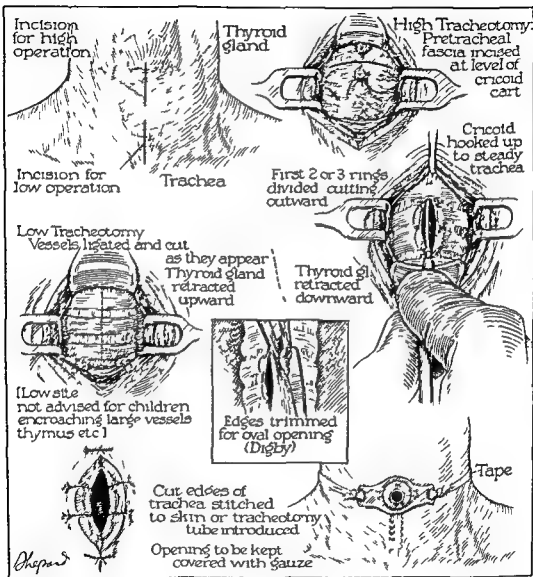


# THYROIDECTOMY

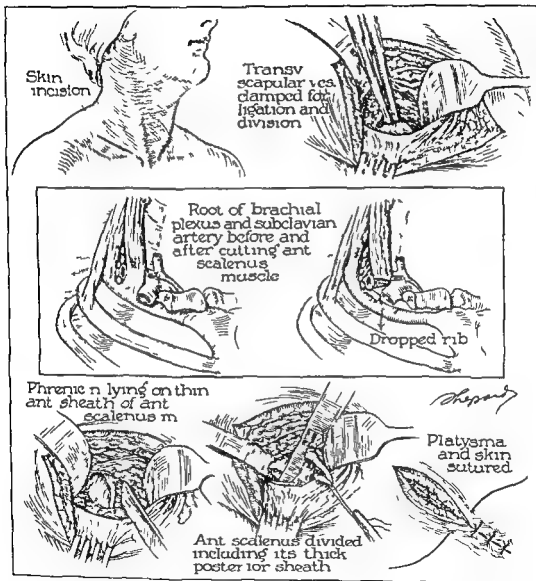




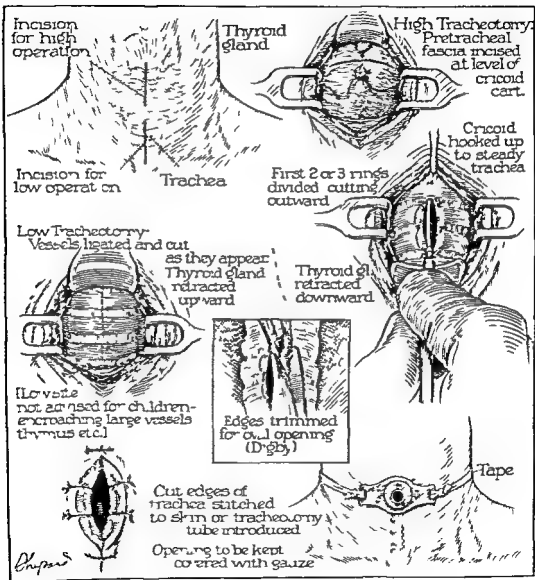
# TRACHEOTOMY



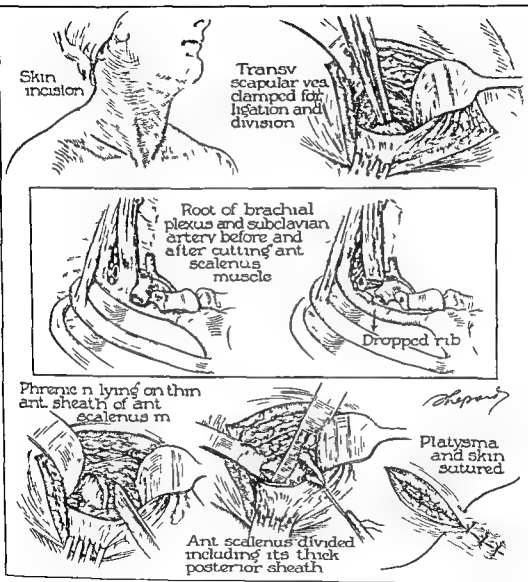
# SCALenus ANTICUS SYNDROME



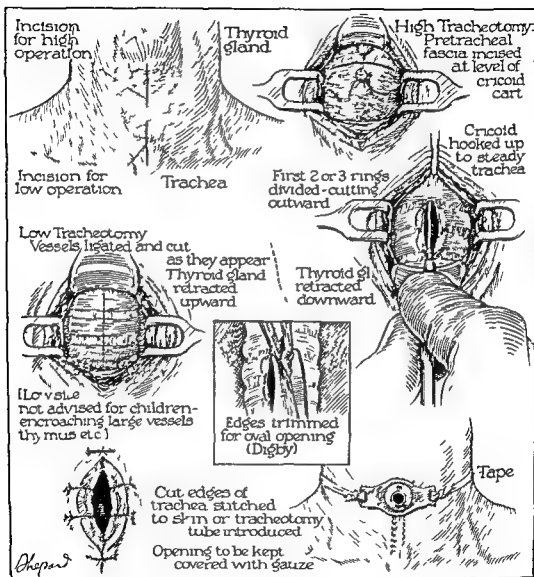
# TRACHEOTOMY



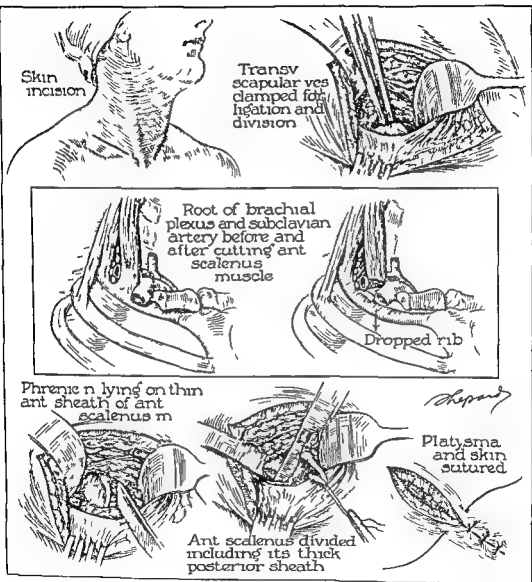
# SCALENUS ANTICUS SYNDROME



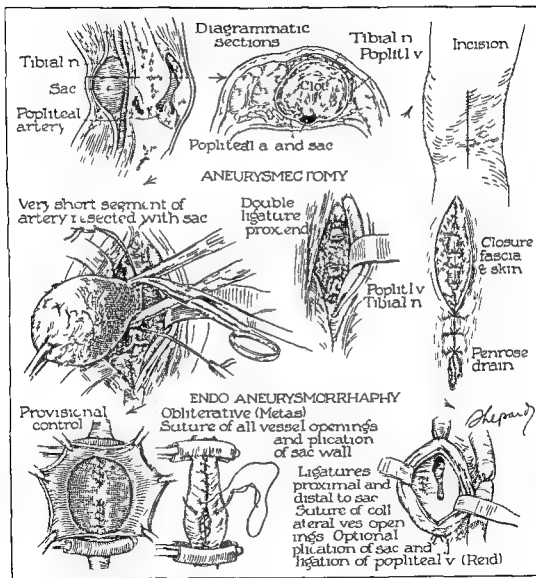
# TRACHEOTOMY



# SCALENUS ANTICUS SYNDROME



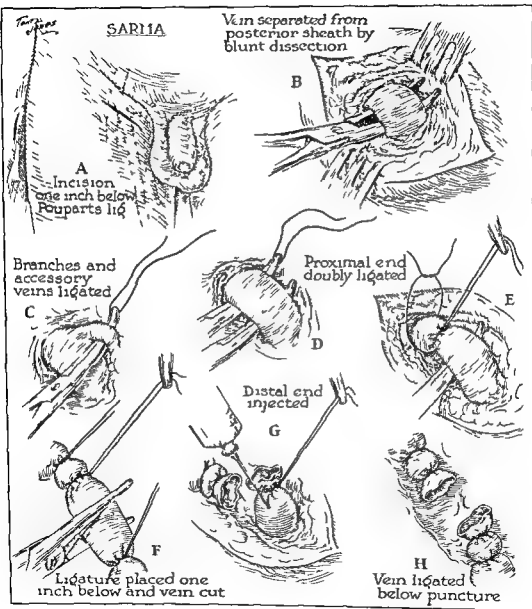
# POPLITEAL ANEURYSM



# LIGATION OF VARICOSE SAPHENOUS VEIN

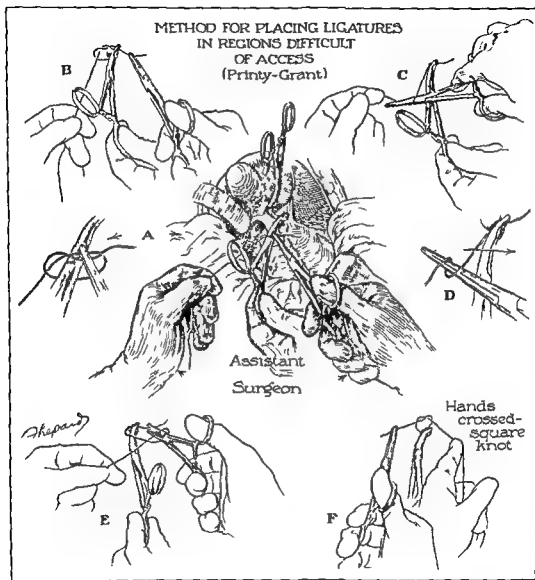
SARMA

Vein separated from posterior sheath by blunt dissection

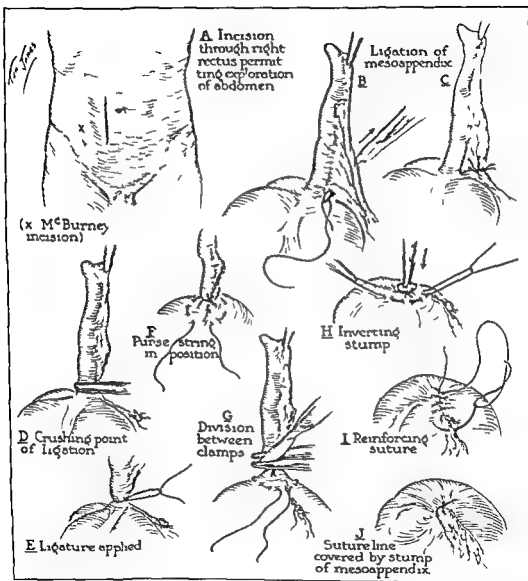




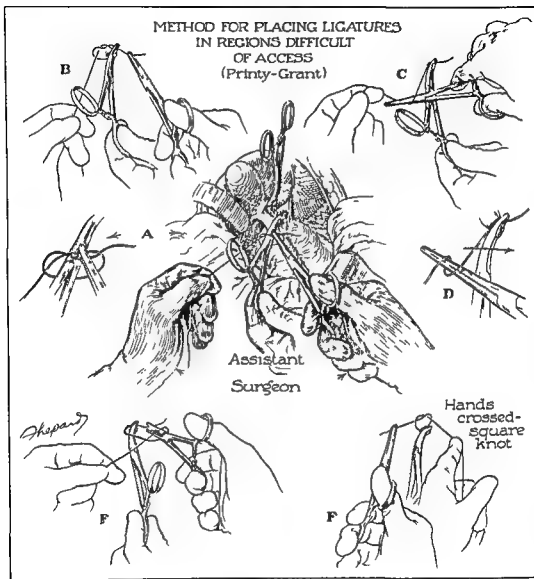
## LIGATURE TECHNIQUE



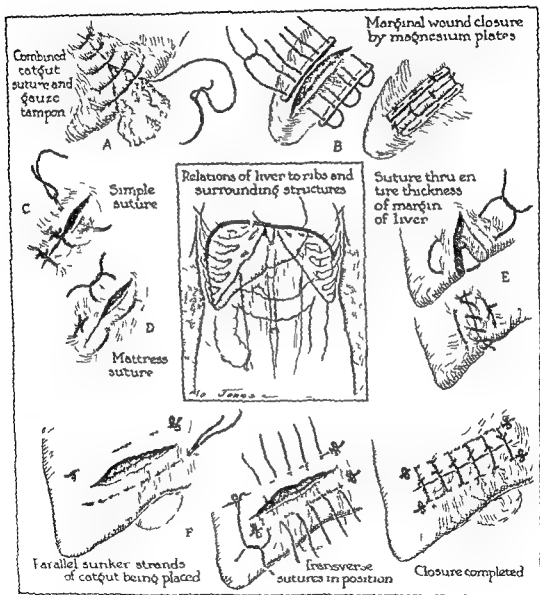
# APPENDECTOMY



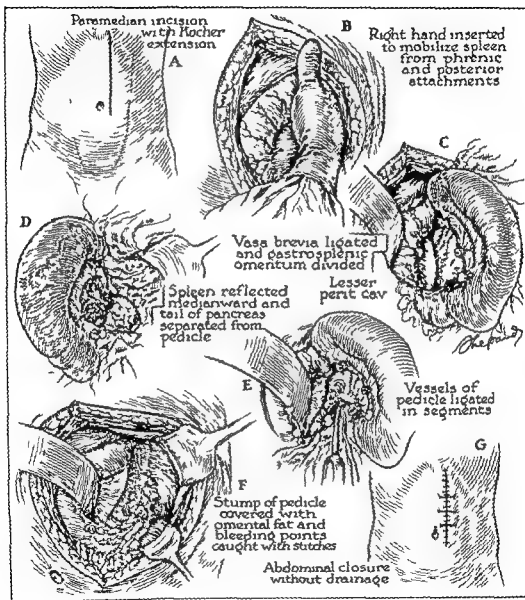
# LIGATURE TECHNIQUE



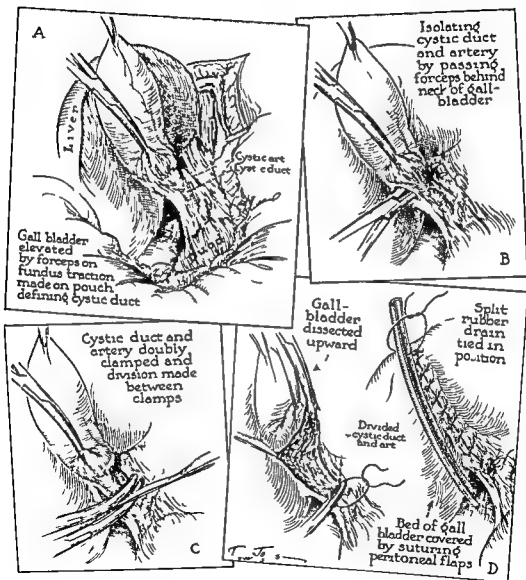
# LIVER SUTURES



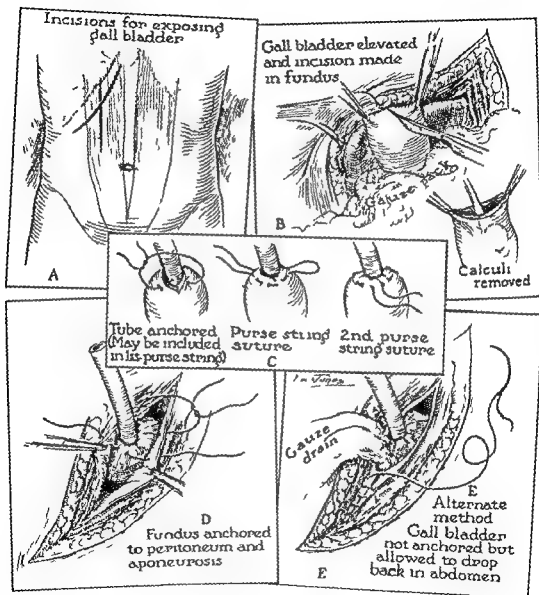
# SPLENECTOMY



# CHOLECYSTECTOMY



# CHOLECYSTOSTOMY



# OPERATIONS ON BILIARY TRACT (No 2)

## HEPATICODUODENOSTOMY

Direct  
Gatewood's  
case

Posterior and lateral  
sutures placed  
duodenum & hepatic  
duct incised

Modified Direct  
(W J Mayo)

Flap from  
crescent-  
shaped  
incision

Post and  
latrl sutures

T tube

Ant sutures

Plastic  
(Walton)

Flap sutured  
to liver capsule

Indirect  
(Jenckel)

Duod  
opening  
closed  
around  
tube

Long  
flap

Witzel  
duoden-  
ostomy

Exposed tube  
to be covered  
with adjacent  
tissues & omentum

Flap sutured over tube  
to duodenum & duct

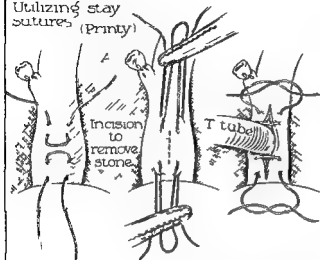
(Tube removed after  
epithelial outgrowth has  
lined new canal)



# OPERATIONS ON BILIARY TRACT (No 1)

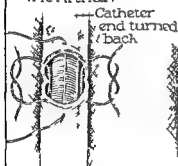
## SUTURE OF THE COMMON DUCT AFTER REMOVAL OF STONE

Utilizing stay  
sutures (Prinny)



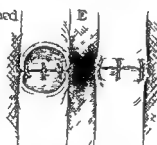
## REPAIR OF INJURIES TO DUCT (with or without drainage)

D  
Partly severed  
(Mc Arthur)



Catheter extends  
into duodenum

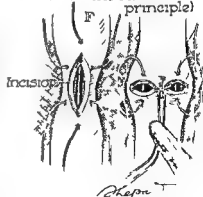
Completely severed  
(Kehr)



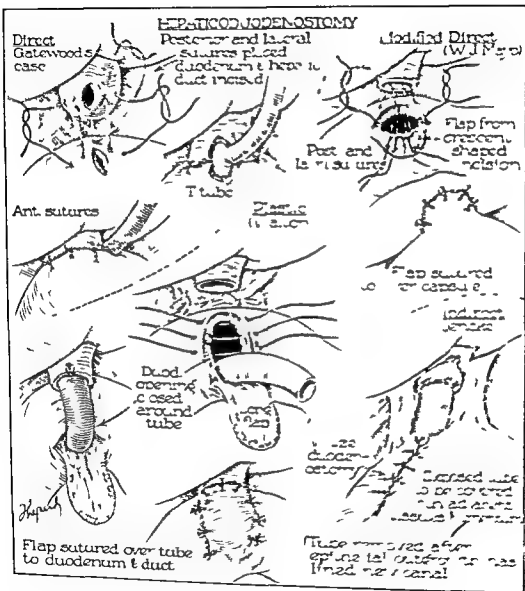
Suture of  
posterior  
wall

Suture of  
anterior  
wall

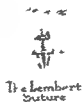
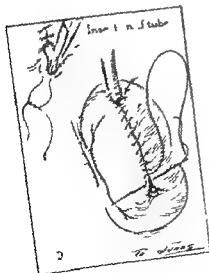
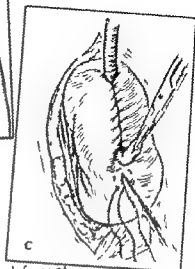
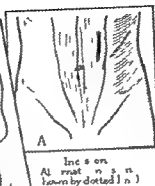
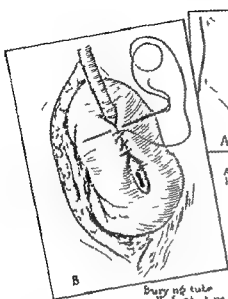
Partial stricture  
(Heineke Mikulicz  
principle)



# OPERATIONS ON BILIARY TRACT (No 2)

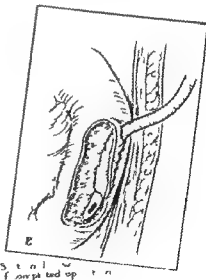


# ENTEROSTOMY

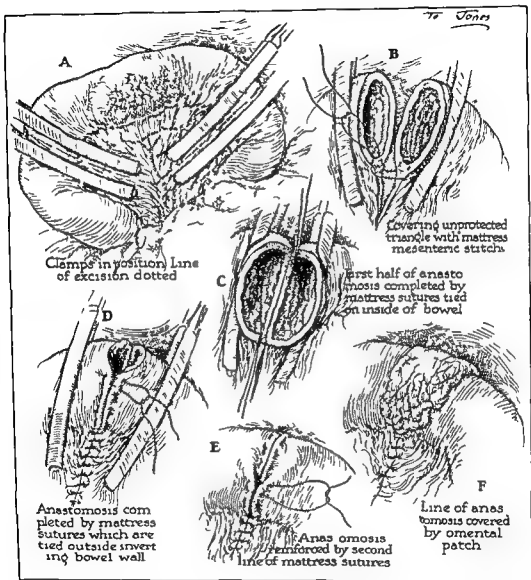


Compared to the by com-  
d. serosa

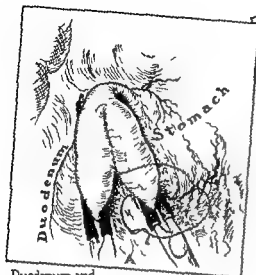
At the time of the  
by the tube



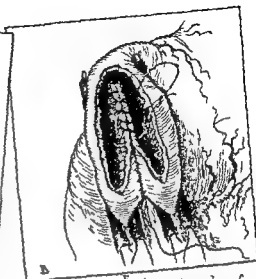
# END TO END ENTERO ENTEROSTOMY (DYAS)



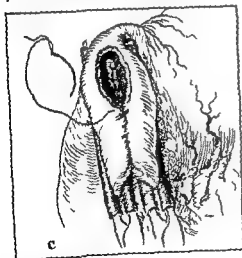
# GASTRODUODENOSTOMY (FINNEY'S TECHNIQUE)



Duodenum and stomach clamped. First line of sutures being placed. Incision shown by dotted line



First or posterior line of sutures completed. Inner through and through suture being placed

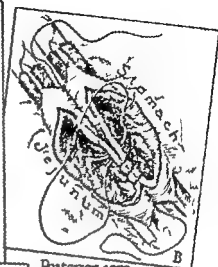
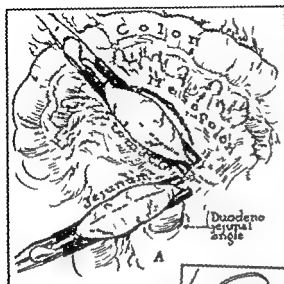


Anterior tier of sutures nearly completed



Operation completed. Outer line of seromuscular sutures seen

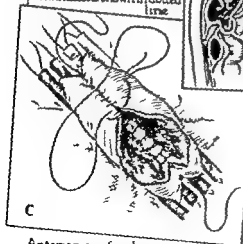
# POSTERIOR GASTROJEJUNOSTOMY



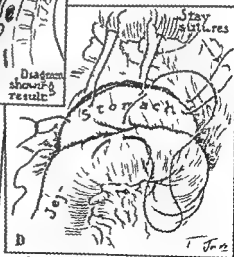
Stomach drawn thru slit meso-  
colon, clamped & ready for approx-  
imation with fold of jejunum.  
Proposed incisions shown in dotted  
line



Posterior sero-  
muscular suture placed  
Posterior marginal suture  
being placed



Anterior marginal suture



Anterior seromuscular suture

# GASTRODUODENOSTOMY (FINNEY'S TECHNIQUE)



Diagram A: Duodenum and stomach clamped. First line of sutures being placed. Incision shown by dotted line.



Diagram B: First or posterior line of sutures completed. Inner through and through suture being placed.

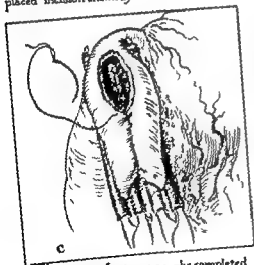


Diagram C: Anterior tier of sutures nearly completed.

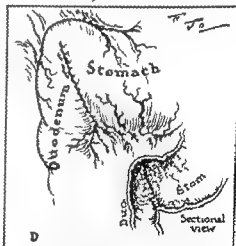
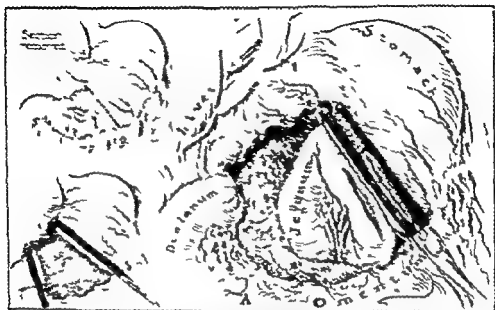
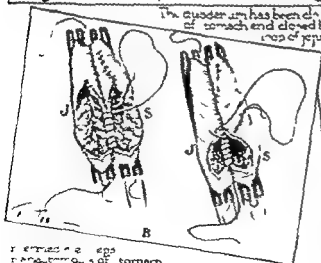


Diagram D: Operation completed. Outer line of seromuscular sutures seen.

# PARTIAL RESECTION OF STOMACH (POLIA)



The duodenum has been divided by inversion. Upper 1/3 of stomach end closed by suture. Anastomosis between top of jejunum and lower 1/3 of stomach opening begun.



B

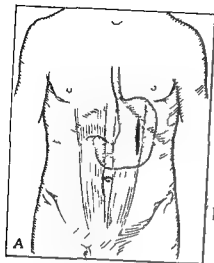
Diagram shows  
anastomosis of stomach  
and jejunum



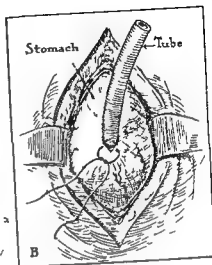
Diagram showing  
finished result in section



# GASTROSTOMY (STAMM METHOD)



A  
Incision (Alternate incision shown by dotted line)

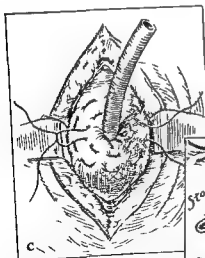


B  
Tube fixed in stomach wall by single stitch

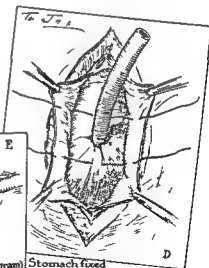
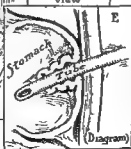
Penetration

Stomach

Sectional view



C  
First purse string suture tied. Two others placed



D  
Stomach fixed to ant abdominal wall

# RAMMSTEDT OPERATION FOR PYLORIC STENOSIS



Incision and exposure



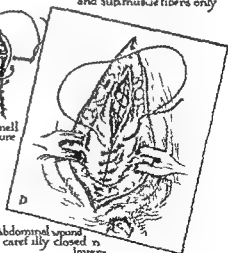
Incision on ant surface of pylorus thru peritoneum and supramuscle fibers only



Separation of lips of incision allowing muosa to protrude

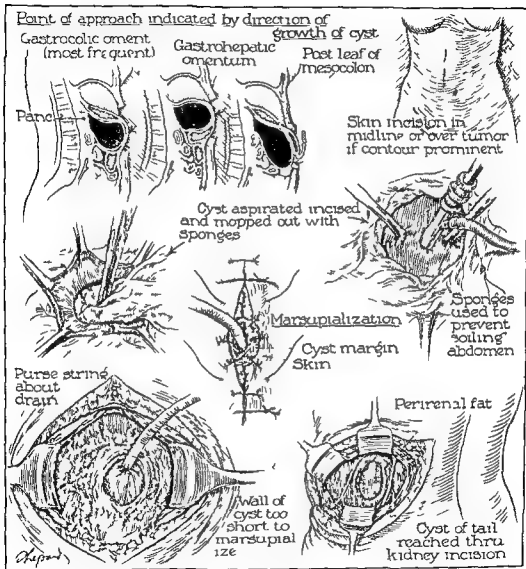


Connell suture



Abdominal wound carefully closed in layers

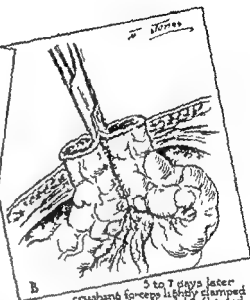
# PANCREATIC CYST



# PARTIAL RESECTION OF COLON (MIKULICZ)



Loop of bowel  
tied together and brought  
out through wound. Note  
fixation to peritoneum and  
fascia. Loop cut away after  
4 to 5 days.



5 to 7 days later  
crushing forceps lightly clamped  
on opposite bowel walls and tightened  
daily until septum is cut through

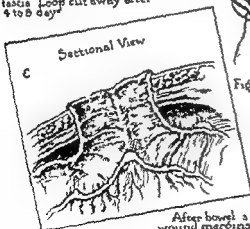
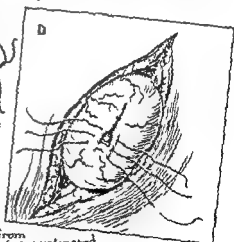


Figure of 8  
suture



After bowel is freed from  
wound margins opening is invaginated  
and closed with Lembert's sutures

# INTUSSUSCEPTION

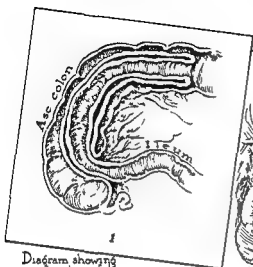
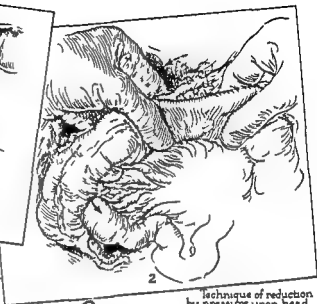


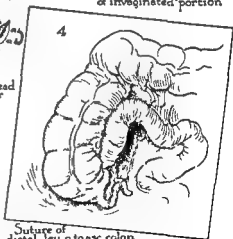
Diagram showing  
invagination of ileum  
into large bowel



Technique of reduction  
by pressure upon head  
of invaginated portion



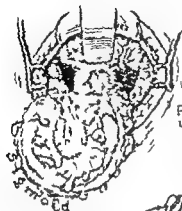
Reduction  
completed



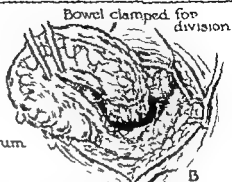
Suture of  
distal ileum to asc colon  
to prevent recurrence

# RESECTION OF THE RECTUM

ABDOMINOPERINEAL OPERATION

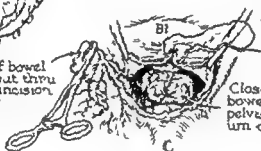


A  
Peritoneum incised



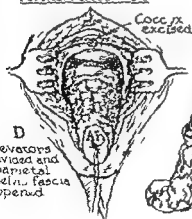
B  
Sup. hemorrhoidal art. ligated and cut  
Rectum mobilized

Proximal end of bowel to be brought out thru left abdominal incision for colostomy



C  
Closed distal end of bowel deposited in pelvis and peritoneum closed over it

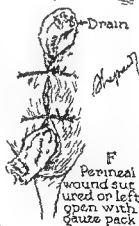
Perineal dissection



D  
Levators divided and perineal pouch fascia opened

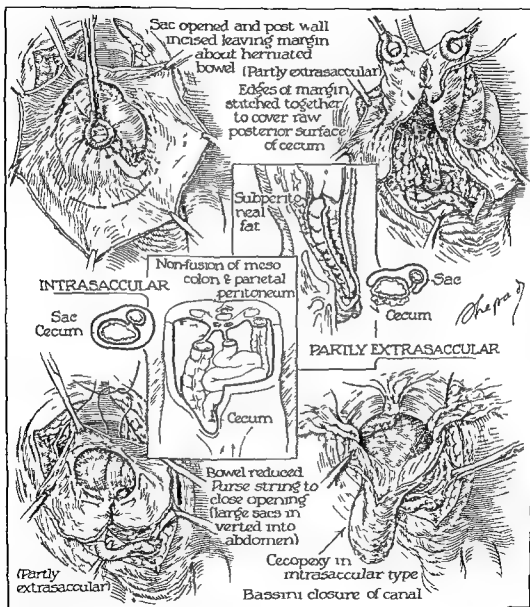


E  
Anal end of rectum freed

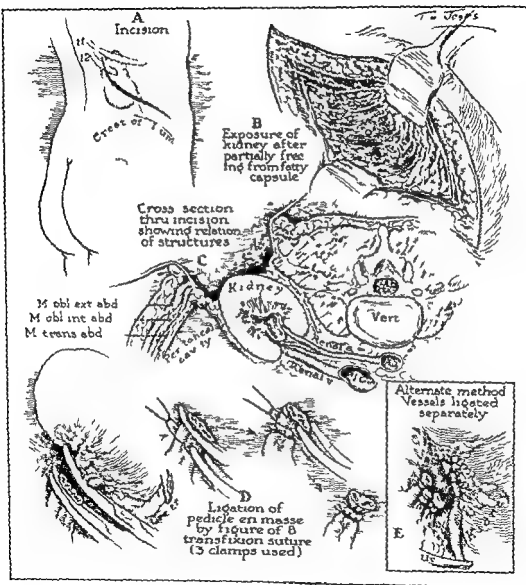


F  
Perineal wound sutured on left open with gauze pack

# SLIDING HERNIA OF THE CECUM

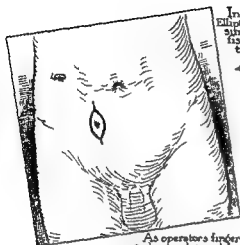


# NEPHRECTOMY



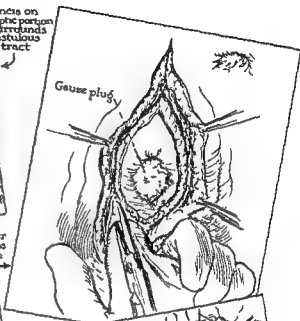


# FECAL FISTULA



Incise on  
Elliptic portion  
surrounds  
fistulous  
tract

As operator's finger  
explores relationships  
excision of tract is com-  
pleted by scissors



Gauze plug



Neck of tract exposed  
Cut away from intestine  
along dotted line

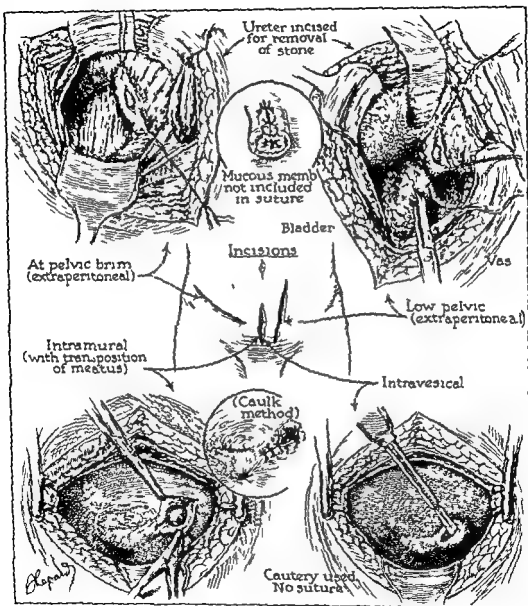


Ford  
stitch

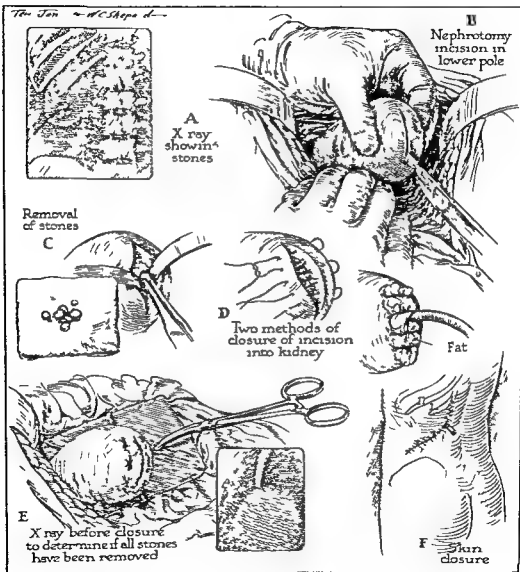


Opening into  
intestine closed transversely

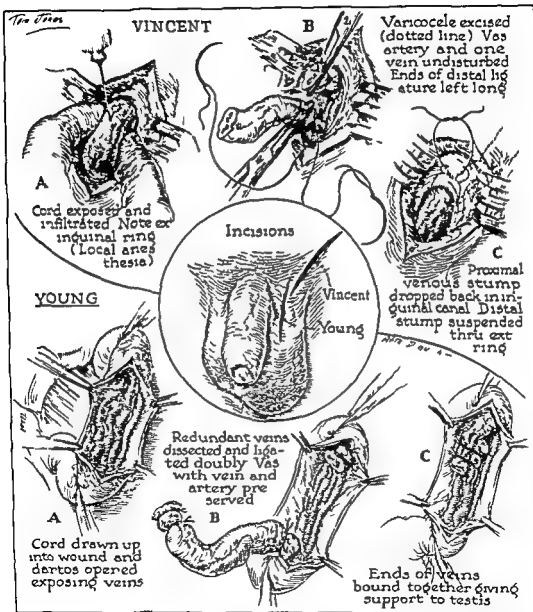
# REMOVAL OF LOW URETERAL CALCULUS



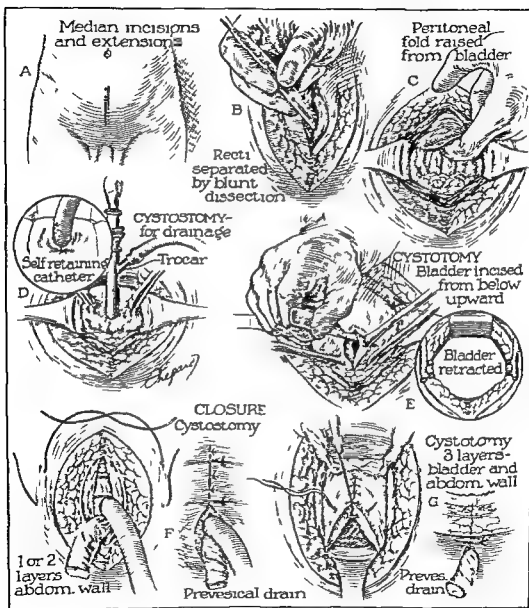
# NEPHROTOMY FOR RENAL CALCULI



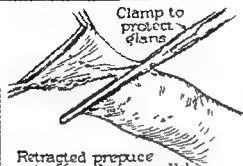
# OPERATIONS FOR VARICOCELE (OR VARICOCELECTOMY)



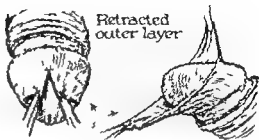
# SUPRAPUBIC CYSTOSTOMY AND CYSTOTOMY



# CIRCUMCISION



Retracted prepuce cut off in line parallel with corona



Inner layer trimmed to within one cm of corona



Alternate stitches of layers left long to include strip of vasalined gauze



Desired result partly covered glans

## SECOND METHOD

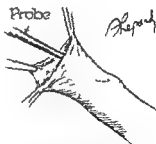
Cut

Adhesive



Dorsal split (Continuous suture of layers)

Vasalined gauze dressing



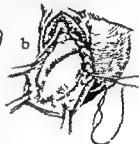
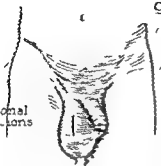
If adherent prepuce separated from glans

# HYDROCELE

## OPEN OPERATIONS

Tunica trimmed away  
Hemostatic suture about  
remaining margin

1  
Optional  
incisions



2 WINKELMANN



Tunica turned inside out  
and stitched posterior  
to cord and testis

3 ANDREWS - Testicle pushed through  
small opening high in sac  
Sac everted upon cord



4

## INJECTION METHOD



Aspiration  
of fluid

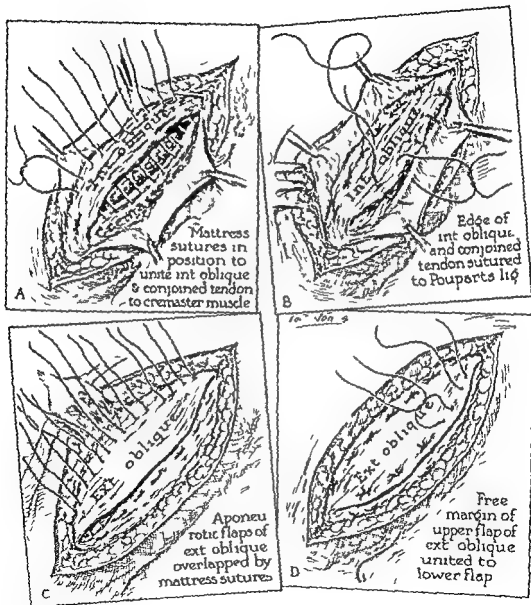


Injection  
of irritant



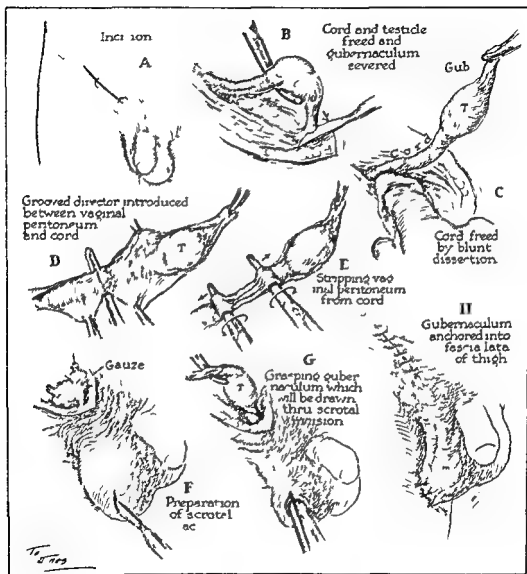
Massage  
of scrotum

# HALSTED OPERATION FOR INDIRECT INGUINAL HERNIA

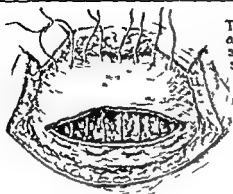




# OPERATION FOR UNDESCENDED TESTIS (MCKENNA)

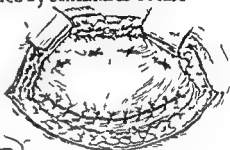


# METHODS OF REPAIR IN LARGE UMBILICAL HERNIA

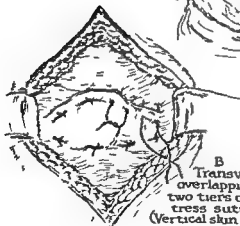


Incisions  
Elliptic transverse  
Elliptic vertical

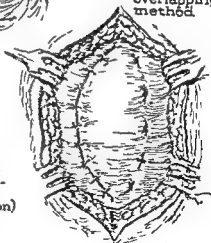
A  
Transverse overlapping of  
aponeurotic flaps by mattress  
sutures Free edge of upper flap  
secured by continuous suture



C  
Lateral  
overlapping  
method

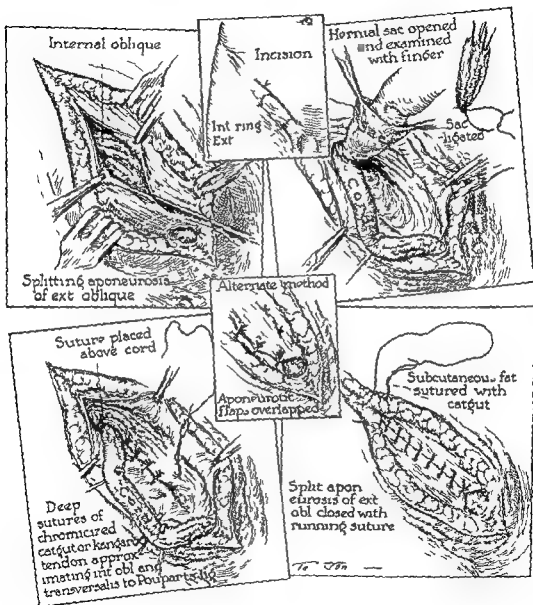


B  
Transverse  
overlapping by  
two tiers of mat-  
tress sutures  
(Vertical skin incision)

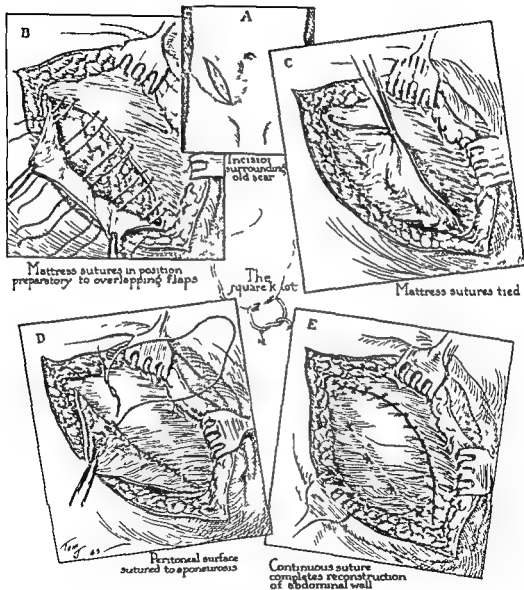


For  
Jones

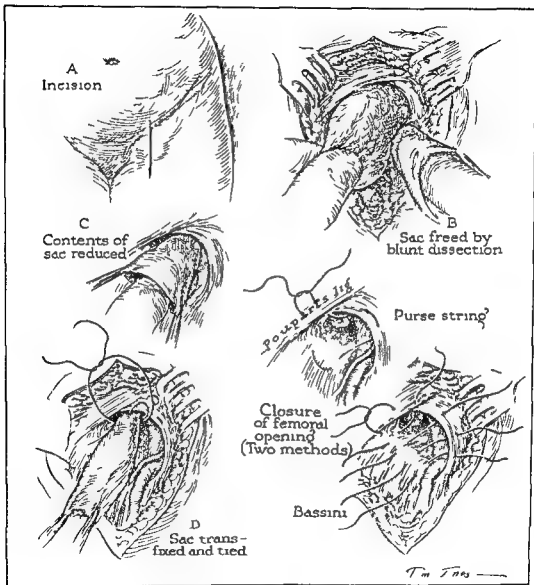
# BASSINI OPERATION FOR INDIRECT INGUINAL HERNIA



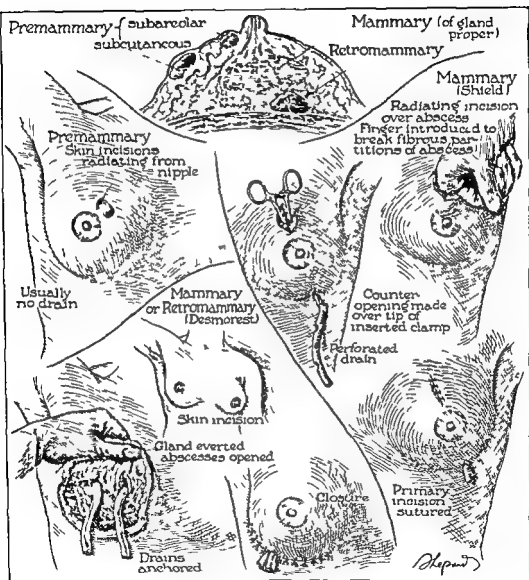
# AN OPERATION FOR POSTOPERATIVE VENTRAL HERNIA (JUDD METHOD)



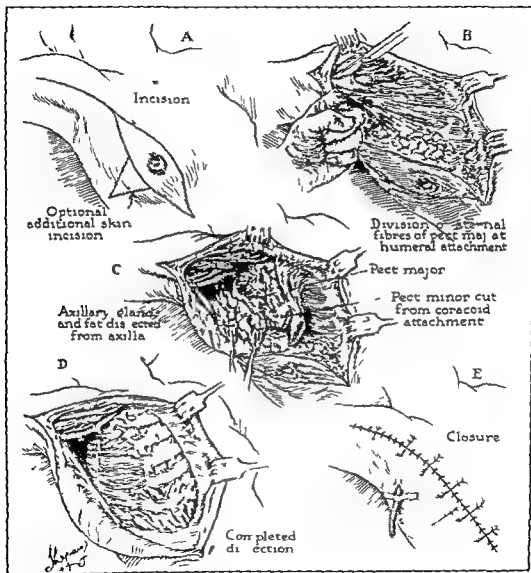
# REPAIR OF FEMORAL HERNIA



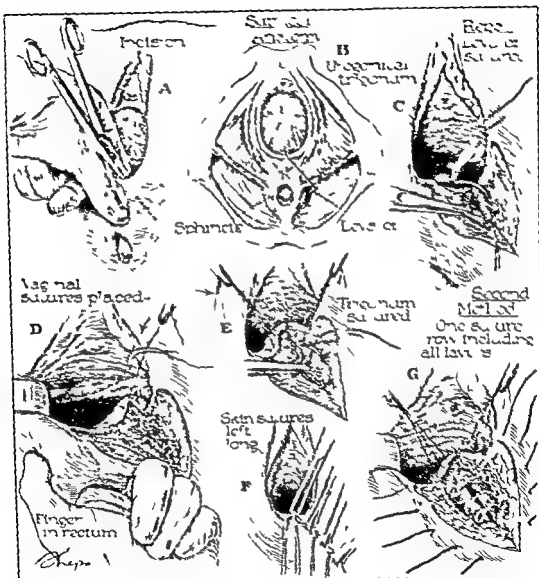
## MAMMARY ABSCESS



# RADICAL AMPUTATION OF THE BREAST

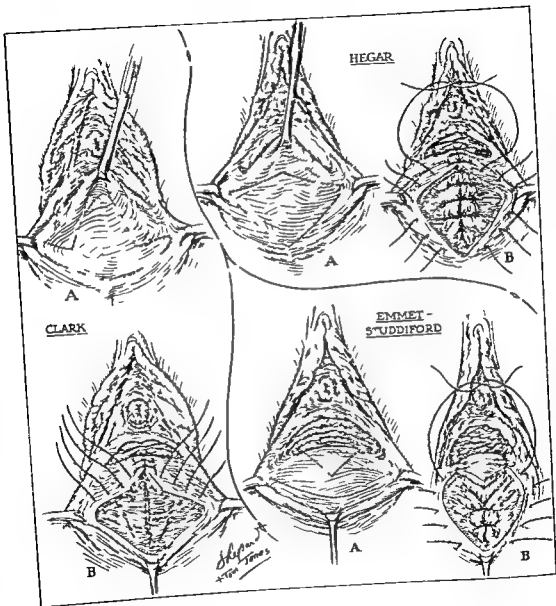


# EPISIOTOMY

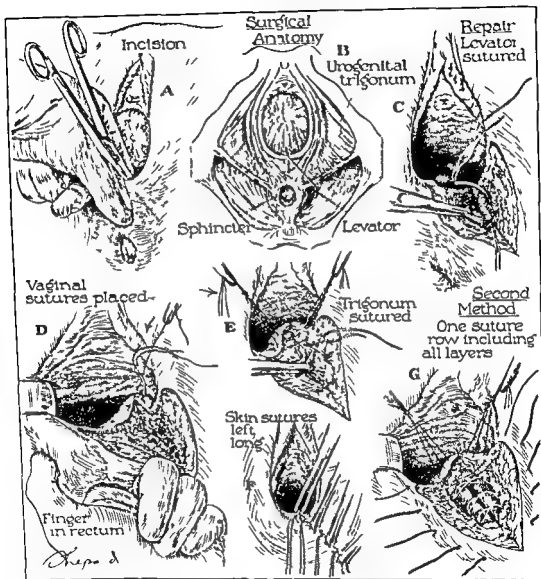




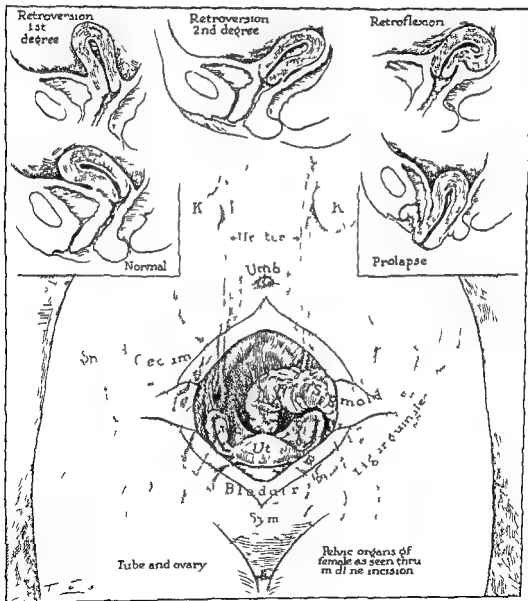
# REPAIR OF PERINEUM



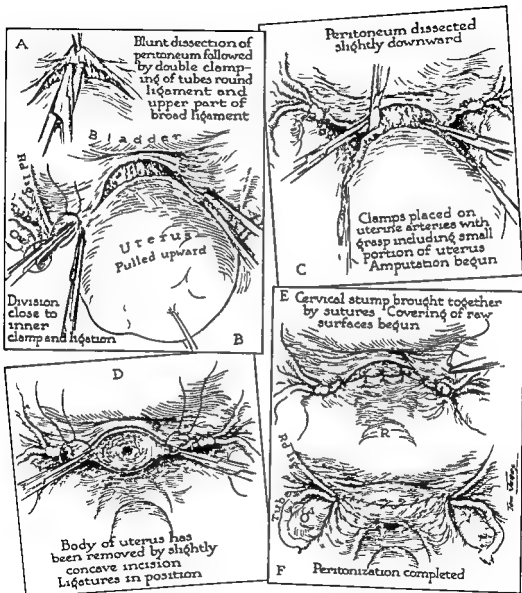
# EPISIOTOMY



# SURGICAL ANATOMY OF THE UTERUS

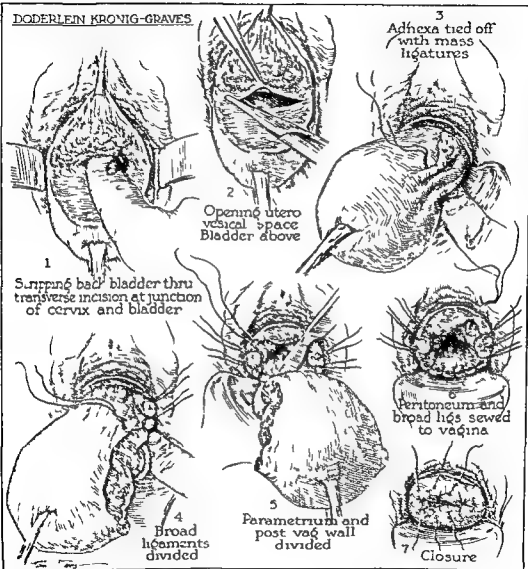


# HYSTERECTOMY (CURTIS)



# VAGINAL HYSTERECTOMY

## DODERLEIN KRONIG-GRAVES



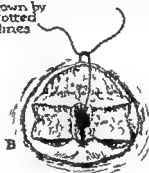
# AMPUTATION OF THE CERVIX UTERI

CURTIS SCHROEDER



Cervix spl.  
Portion  
removed  
shown by  
dotted  
lines

Raw surfaces  
closed by deep  
sutures

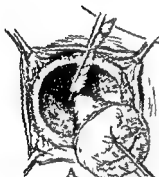


After Cure

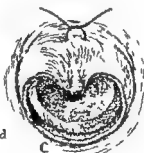


Ant and post  
lips united  
to mucosa of  
cervical canal

STURMDORF



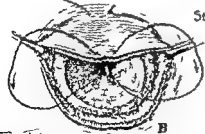
A  
Vaginal cuff  
elevated Cone  
shaped portion excised



Sturmdorf  
stitch



Closure



B

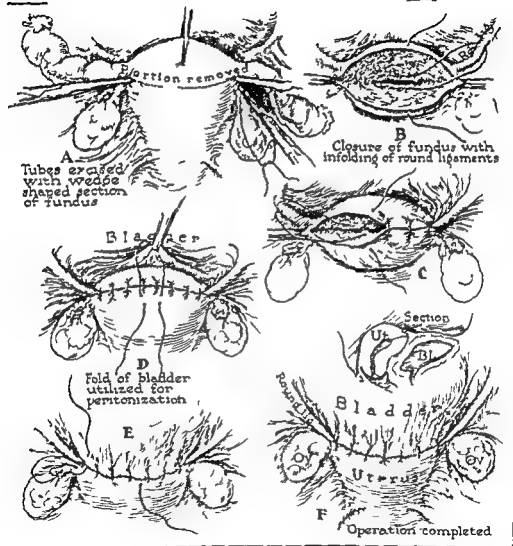
GRAVES  
EMMET

Repair of  
cervix

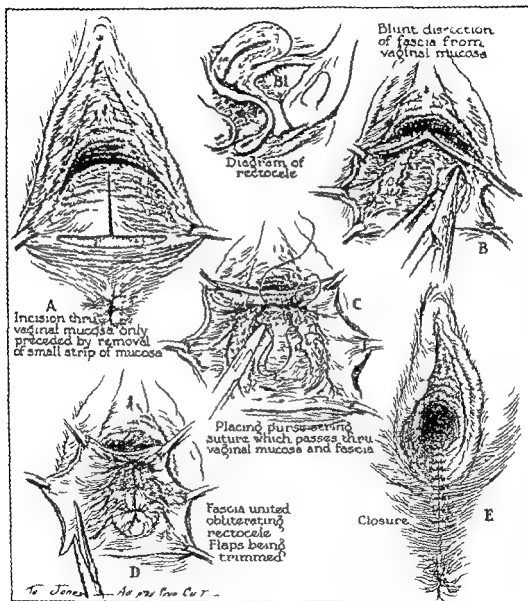


# SALPINGECTOMY WITH DEFUNDECTOMY

FALLS



# REPAIR OF RECTOCELE

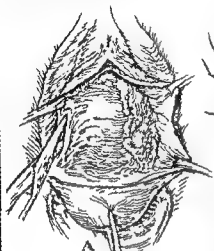




# REPAIR OF CYSTOCELE

## ADVANCEMENT OPERATION

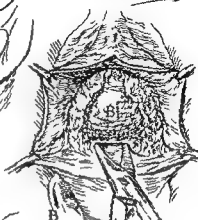
*Adapted from Cuthbertson to Jones*



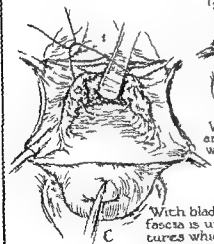
**A**  
Fascia separated  
from vaginal flaps



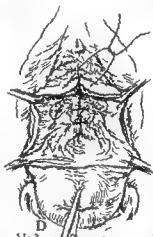
Diagram of  
cystocele



**B**  
Bladder freed  
by blunt dissection



**C**  
With bladder elevated  
fascia is united by su-  
tures which enter  
uterus

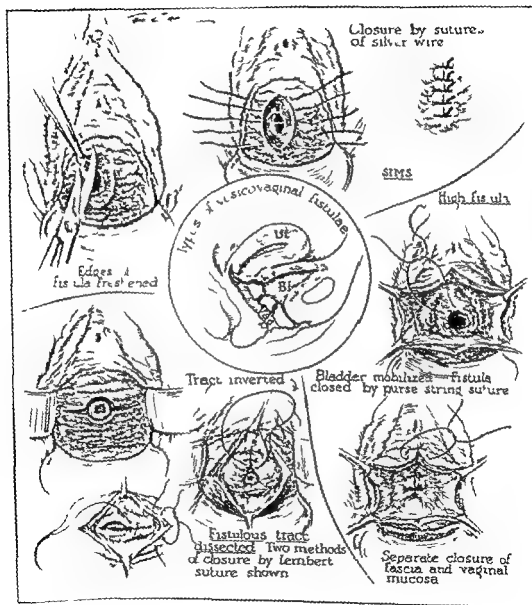


**D**  
Vaginal flaps trimmed  
and united by sutures  
which grasp under-  
lying fascia

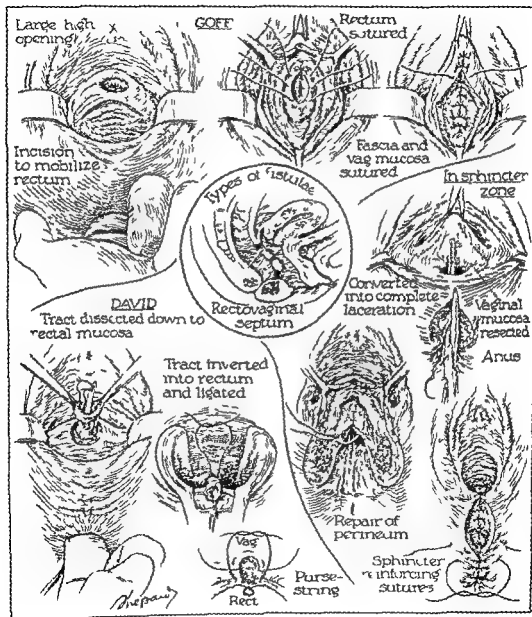


**F**  
Closure

# REPAIR OF VESICOVAGINAL FISTULA



# RECTOVAGINAL FISTULA



# ETHICON SUTURES

STRONG SUPPLE SMOOTH UNIFORM HEAT-STERILIZED



JOHNSON & JOHNSON began producing surgical sutures in 1887. Our experience of more than half a century has led us to the production of what thousands of surgeons in all parts of the world consider the most dependable catgut ever devised—Ethicon Non Boilable Catgut Sutures.

Our scientific staff includes the most capable men available who devote their entire time to experiment and control in our laboratories in the United States, England and Australia.

Absolute sterilization by heat without impairment of tensile strength is the daily production standard of Ethicon Non Boilable Catgut Sutures. As taken from the sterile tubes, they possess more tensile strength than is required to ligate the largest human blood vessel or to suture the densest human tissue.

Ethicon Non Boilable Catgut Sutures are produced by exclusive procedures from the raw material to the final stage of packaging and inspection in our laboratories. They are ~~supplied~~ smooth and uniform.

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